

A REVISION OF THE SUBSPECIES OF THE GREEN HERON
(*BUTORIDES VIRESCENS* [LINNÆUS]).

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The following revision of the forms of *Butorides virescens* (Linnaeus) was undertaken at the instance of Mr. H. W. Henshaw, Chief of the Biological Survey. Its purpose is to clear away, as far as the present material will permit, the confusion now existing with regard to the relationships and distribution of the various races, and thus to assist in preparing the way for a bulletin on the migration and distribution of North American herons, now in course of preparation by Prof. W. W. Cooke, and soon to appear as a publication of the Biological Survey.

For this task the writer has been able to examine 568 specimens, including the types of all the forms of this species, excepting *Butorides virescens virescens*, *Butorides virescens frazari*, and *Butorides virescens maculatus*; and comprising the entire series of green herons in the collections of the United States National Museum, including that of the Biological Survey; the American Museum of Natural History; the Academy of Natural Sciences of Philadelphia, including that of Mr. H. W. Fowler; the Museum of Comparative Zoology in Cambridge, Massachusetts, including the Bangs collection; and the collection of Dr. Jonathan Dwight, jr.; together with a few important birds from the Carnegie Museum of Pittsburgh, Pennsylvania, and the Field Museum of Chicago. To the authorities of these institutions, particularly the United States National Museum, and to the individuals mentioned, as well as to the custodians of the various bird collections, especially Dr. Charles W. Richmond, of the United States National Museum, the writer takes this occasion to offer expression of his sincere appreciation of facilities afforded.

The various races of *Butorides virescens* with their intricate relationships and rather peculiar geographical distribution, have always presented a difficult problem. Previous authors who have wrestled with these difficulties have lacked sufficient material, particularly

from south of the United States; and the literature on the subject consists of only notes and short papers, including no extended monograph of the species. The series of specimens now at hand is undoubtedly much greater than any that other investigators have been able to bring together. With this advantage, the present writer hopes to make at least some contribution to our knowledge of this perplexing group, although, of course, he fully realizes that there is much yet to learn.

One of the by-products, so to speak, of this investigation has been the necessary determination of the status of *Butorides brunescens* (Lembeye)¹ of Cuba, which occurs together with the form of *Butorides virescens* inhabiting that island. This bird has often passed as merely a color phase of *Butorides virescens*; at other times as a different species: The writer's study indicates that without much doubt it is a perfectly distinct species, further discussion of which has already appeared in a separate paper.²

From a careful study of the present material, two conclusions appear to be inevitable: First, that, without undue and useless refinement, no subspecific subdivision is possible among the birds inhabiting all of the eastern United States, eastern and central Mexico, south to Guatemala and Honduras; and second, that, in the West Indies, either we must recognize a large number of additional forms, or merge all, including even *Butorides virescens bahamensis*, with *Butorides virescens virescens*. To adopt the latter alternative, however, would be to obscure all the evident and highly interesting, though to some extent puzzling, geographical variations which these West Indian birds exhibit. The writer has, therefore, adopted the former course, as better representing the facts; and this has resulted in allotting a separate subspecies to each of the larger Lesser Antilles south of Guadeloupe, with the single exception of St. Vincent. In one or two cases where forms are separated by a wide geographic area and by intervening races, it has been thought better to recognize by name slight average differences, rather than to refer such a bird to a distant and isolated race, to which, although superficially very similar, it could have no close phylogenetic relationship. This, of course, is the same problem that one meets often in wide-ranging and plastic groups, and which, it seems to the writer, would be in much the best way solved by assigning a name to the isolated colony, if there can be found any characters at all, however slight, to serve as a basis.

The geographical range of *Butorides virescens*, including its various subspecies, extends from southeastern Canada through the United

¹ *Ardea brunescens* Lembeye, Aves de la Isla de Cuba, 1850, p. 84, pl. 12.

² Oberholser, Proc. Biol. Soc. Wash., vol. 25, 1912, pp. 53-56.

States, Mexico, Central America, and the West Indies to northern South America. In the northern part of the Neotropical Region it inhabits the Lower Tropical and Upper Tropical zones; in the southern portion of the Nearctic Region, the Lower Austral, Upper Austral, and Transition zones. The total number of its recognizable races becomes now 18, of which 12 are insular, most of them West Indian. The favorite haunts of the species are the swamps, marshes, large and small streams, both along the seacoast and in the interior; but not infrequently the bird chooses dry upland for its nesting sites, though usually not far from water, from which it obtains the greater part of its food. It is a frequenter of the reedy or bushy marshes, sparsely wooded swamps, the margins of bayou, lake, and stream, of damp thickets, and the more or less open country, rather than of the deep forest. With the exception of the northernmost three, *Butorides virescens virescens*, *Butorides virescens anthonyi*, and *Butorides virescens eremonomus*¹, all the forms appear to be permanently resident; but these three perform extensive migrations.

Some curiously close resemblances between widely separated races may be mentioned, as of interest from an evolutionary point of view. The bird from Swan Island, in the Caribbean Sea—*Butorides virescens saturatus*—is colored much more nearly like *Butorides virescens frazari*, from Lower California, than like *Butorides virescens virescens* of the adjacent mainland. Also, *Butorides virescens mesatus*,² from Nicaragua, is, in size and color, more like the race from northern Mexico, *Butorides virescens eremonomus*,¹ than like the intervening *Butorides virescens virescens* or the Costa Rican *Butorides virescens hypernotius*.³ The bird inhabiting the Pearl Islands, in the Bay of Panama, is, likewise, in appearance nearer *Butorides virescens saturatus*, from Swan Island, than to *Butorides virescens hypernotius*³ on the neighboring mainland. The Bahaman *Butorides virescens bahamensis* is very different from both *Butorides virescens virescens*, from Florida, and *Butorides virescens cubanus*,⁴ from Cuba, and, in color, much more like *Butorides virescens anthonyi* of Arizona. The subspecies living on the island of St. Christopher, *Butorides virescens christophorensis*,⁵ is much more like *Butorides virescens bahamensis* than it is like *Butorides virescens cubanus*,⁴ which almost surrounds it; and *Butorides virescens barbadensis*,⁶ from Barbados, is much closer in color to the geographically far distant *Butorides virescens bahamensis* than to any of the several intervening races. Again, the birds from the islands of Martinique (*Butorides virescens maculatus*), St. Lucia (*Butorides virescens lucianus*),⁷ and Grenada (*Butorides virescens grenadensis*)⁸ are nearer in appearance to *Butorides virescens cubanus*⁴

¹ See p. 546.³ See p. 549.⁶ See p. 561.⁷ See p. 565.² See p. 548.⁴ See p. 557.⁶ See p. 567.⁸ See p. 568.

than to *Butorides virescens dominicanus*¹ of the intervening island of Dominica. The wide geographical range of three of the continental forms—*Butorides virescens virescens*, *Butorides virescens anthonyi*, and *Butorides virescens hypernotius*², in striking contrast to the limited distribution of most of the island races, is also worthy of note.

The female of *Butorides virescens* appears to be, in color, absolutely identical with the male; but is, in most cases, somewhat smaller, though in some races, and even in certain regions within the range of the same subspecies, is, if our series represents the truth, equally as large as the male or even larger. Owing to this relative variation the male is used as the basis for our comparisons.

Birds in juvenal plumage differ considerably in color from adults, being duller and more brownish on the upper surface of the body, lacking the glaucous appearance, as well as the dorsal plumaceous feathers, besides having more rusty edgings to the feathers, and often ochraceous or buffy terminal spots on the scapulars; wing-quills and greater coverts tipped, often broadly, with white or buffy; other wing-coverts much more broadly margined with whitish, buffy, or ochraceous than in the adult; median and some of the distal lesser coverts with subtriangular terminal shaft spots of buff; hind neck, sides of neck, and sides of head much paler and duller, somewhat streaked with dark brown or blackish (the sides of head particularly); lower parts much paler—white, heavily streaked with dark earthy brown, this color very little rufescent on foreneck, the streaks sometimes nearly or quite absent on the median line, especially of throat, chin, and anal region; bill of a lighter color than in the adult, mostly dull greenish, with only the culmen dusky, the mandible largely light yellowish; legs and feet dull greenish yellow or olivaceous. From this plumage the bird passes gradually into the adult condition, obtaining its full livery, under normal conditions, apparently by the first breeding season. Birds not quite fully adult are paler below than when in complete plumage; the neck is more reddish or fulvescent, and paler; the upper surface of body has more rusty edgings and a less glaucous bluish cast; the wings have darker and more rusty edgings. Immatures are apparently often smaller than adults, though many in the above described juvenal plumage are of full adult dimensions.

Seasonal differences in color are usually slight, and consist mostly in the slightly paler neck, and lighter, duller, more bluish upper parts of worn summer specimens. Individual color variation, on the other hand, is, in apparently all the forms of the species, considerable. It consists chiefly in the depth of shade of the gray on the posterior lower parts; the dark streaking on throat and breast, which in some specimens is broad and distinct, in others almost absent, in some light brown, in others black; the color of the posterior upper parts, which

See p. 562.

² See p. 549.

in some examples is dull oily green, in others decidedly bluish with a glaucous bloom; also in the depth and shade of the chestnut, maroon, or fulvous of the neck and sides of the head.

The characters which separate the various subspecies are largely differences of size, and of the colors of the hind neck, sides of the head, and of the entire lower surface. The color differences of pileum, back, wings, and tail are of very little value in diagnoses, since these are due chiefly to age, season, or individual variation. The names of colors used in my descriptions are based on Mr. Robert Ridgway's Nomenclature of Colors.¹

All the measurements in this paper are in millimeters. The specimens used in the average measurements under each subspecies, and which form the basis of comparison, are, just as far as possible, from typical specimens; that is, from examples representing the best differentiation. In the tables of detailed measurements all the specimens used in the diagnostic averages are indicated by a minuscule; and all other than adult birds are noted. The various dimensions of which use is made in the following pages have been taken as follows:

Length of wing.—Measured in a straight line from the bend of the closed wing to the end of the longest primary with these feathers in their natural position; that is, not straightened.

Length of tail.—Taken with dividers from the point of insertion of the middle rectrices to the tip of the longest.

Exposed culmen.—Measured in a straight line from the beginning of the feathers on the culmen to the tip of the maxilla; that is, the chord of the exposed culmen.

Height of bill.—The distance in a straight line from the base of the exposed culmen to the nearest point on the ramus of the mandible.

Length of tarsus.—A straight line from the center of the heel joint on the posterior side to the middle of the joint between the metatarsus and the middle toe on the anterior side.

Middle toe.—Measured along the upper side from the middle of the joint between the metatarsus and the middle toe to the base of the uncovered claw.

BUTORIDES VIRESCENS VIRESCENS (Linnæus).

[*Ardea*] *virescens* LINNÆUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 144 (America) (based on "*Ardea stellaris minima*," CATESBY, Nat. Hist. Carolina, Florida, and Bahama Islands, vol. 1, 1731, p. 80, pl. 80 [Virginia and Carolina]).

Ardea chloroptura BODDAERT, Tabl. Planch. Enlum., 1783, p. 54 (based on "*Crabier de la Louisiane*," DAUBENTON, Planch. Enlum., No. 909; and "*Crabier roux à tête et queue vertes*," BUFFON, Hist. Nat. des Oiseaux [ed. Deux Ponts], vol. 14, p. 146; orig. ed., vol. 7, 1780, p. 407 [Louisiana]).

[*Ardea*] *ludoviciana* GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 630 (based on "*Crabier roux à tête et queue vertes*," BUFFON, Hist. Nat. des Oiseaux, vol. 7, 1780, p. 407; "*Crabier de la Louisiane*," DAUBENTON, Planch. Enlum., No. 909; "*Louisiane Heron*," PENNANT, Arctic Zool., vol. 2, 1785, p. 448, No. 350; and "*Louisiane Heron*," LATHAM, Gen. Synopsis Birds, vol. 3, pt. 1, 1785, p. 81, No. 47) (Louisiana).

¹ Ridgway, Nomenclature of Colors for Naturalists, Boston, 1886.

Chars. subsp..—Size rather large; colors of neck dark and purplish; lower parts dark.

Description..—Adult male, No. 222010, U.S.N.M.; l'On Swamp, Christchurch Parish, South Carolina, April 26, 1911; Dr. E. A. Mearns; original number, 19115. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy bottle green; malar stripe cream buff; submalar stripe purplish maroon mixed with blackish; cheeks, auriculars, sides and back of neck, purplish maroon, somewhat more rufescent anteriorly, paler and somewhat glaucous posteriorly; upper surface of body deep bottle green, somewhat glossy, the long, pointed, plume-like feathers of back and scapulars glaucous and somewhat bluish; wings fuscous, the primaries and outer secondaries dull dark greenish-blue slate color, the innermost primaries and outermost secondaries narrowly tipped with white; tertials, outer webs of inner secondaries, with greater, median, and lesser wing-coverts, dark, glossy bottle green, the tertials pointed but not plume-like; the outer scapulars on exterior webs and the first rows of lesser wing-coverts margined all around rather narrowly with tawny ochraceous, the other rows and median coverts with buff, the greater coverts and outer webs of tertials and innermost secondaries with white; tail dull, dark, grayish blue-green; chin and middle of upper throat creamy white, streaked medially with dark blackish brown, sparingly on the former, heavily on the latter; jugulum purplish maroon, conspicuously streaked medially with creamy white and dark brown; breast, abdomen, sides, crissum, and axillars, slate gray, with a slight brownish tinge, the longest feathers of under tail-coverts with darker centers and paler margins; thighs rufescent; lining of wing slate gray, the feathers margined with buff, the edge of wing broadly buffy white.

“Bill deep black, the lower mandible sometimes partly yellowish or greenish; lores and orbits varying from olive-green to bright yellow; iris gamboge yellow; legs and feet olive green or olive yellow, the scutellæ more greenish; claws horn-color” (Ridgway).

Measurements..—Total length (in flesh), 394–490 mm.; extent of wing, 521–711; weight, 6.25–7.50 ounces.

Male:¹ Wing, 176–188 (average, 181.1) mm.; tail, 61.5–71 (66.5); exposed culmen, 58–69 (60.9); height of bill at base, 11–13 (12.1); tarsus, 51–57 (53); middle toe, 44.3–48.5 (45.0).

Female:² Wing, 170–183.5 (175.1) mm.; tail, 58.5–74.5 (65.5); exposed culmen, 56–62.5 (59.8); height of bill at base, 9.0–12.8 (11.7); tarsus, 48–55 (51.2); middle toe, 44–49 (45.7).

Type-locality..—Coast of South Carolina.³

¹ Fourteen specimens, from Pennsylvania, New Jersey, Maryland, Virginia, the District of Columbia, and Kansas.

² Thirteen specimens, from New York, New Jersey, Pennsylvania, Maryland, Virginia, Indiana, Missouri, and Kansas.

³ Here for the first time definitely fixed.

Geographical distribution.—Southeastern North America, most of Mexico, and northern Central America: north to Prospect, central Nova Scotia; St. John, southern New Brunswick; Calais and Pittsfield, southern Maine; Montreal, southern Quebec; Ottawa, Guelph, and Neebish Island, southern Ontario; Grand Rapids, southern Michigan; Sturgeon Bay and Kelley Brook, northern Wisconsin; Minneapolis, central Minnesota; and Fort Sisseton, northeastern South Dakota; west to Fort Sisseton, eastern South Dakota; Neligh and Gibbon, eastern Nebraska; western Kansas; Fort Reno and Chattanooga, central Oklahoma; Pecos City and Fort Stockton, western Texas; casually to Loveland, central Colorado, and Rinconada, northern New Mexico;¹ Tampico, eastern Tamaulipas; Isla de los Frijoles, and Rivera, eastern Vera Cruz; San Mateo, near City of Mexico, Mexico; and western Mexico (from Patzcuaro, western Michoacan, and Ocotlán, eastern Jalisco) to the Pacific coast north as far as Mazatlan, southern Sinaloa; south to the Dry Tortugas, Florida; the Gulf coast of the United States, from Florida to Brownsville, Texas; the Pacific coast of southern Mexico, at Manzanillo (Colima), Papayo, (Guerrero), and Tonalá, (Chiapas); Chiapam (=Champerico) and Dueñas, southern Guatemala; Omoa and Ceiba, northern Honduras; east to Ceiba, Honduras, and the eastern coasts of British Honduras, Yucatan, Mexico, the United States, and Nova Scotia. Winters chiefly in Honduras, Guatemala, central and southern Mexico, Florida, and the Bermuda Islands. Accidental at Fajardo, Porto Rico.

Throughout the wide range of this form there is surprisingly little geographical variation, and no further subspecific subdivision seems advisable, at least with present material. Birds from the northeastern United States represent the extreme differentiation of *Butorides virescens virescens*, with which those from South Carolina, the type-locality, seem to be in all respects practically identical. Breeding birds from the mainland of Florida, from southern Alabama, southern Mississippi, and southern Texas are absolutely indistinguishable in color from examples taken in New York and Pennsylvania; but in size they average very slightly smaller. Specimens of a considerable series from the islands of the Dry Tortugas, Florida, off the southern end of the Florida peninsula, are scarcely smaller than those from the Florida mainland, but are mostly less bluish or glaucous green above; which difference, however, seems not to be of geographical significance, since it occurs more or less as an individual variation throughout the entire range of the species.

From southern Tamaulipas to Tabasco, along the eastern coast of Mexico, occur some birds which are darker than those of usual colors from the eastern United States; and which are, in the males, about

¹ M. Surber, spring (April to June), 1904, one seen.

the size of Florida birds, in the females averaging smaller than Florida females. These differences, however, seem too slight and unsatisfactory for subspecific recognition, because there are altogether too many individuals in each of these two series that are inseparable from individuals in the other. Furthermore, the resident birds of western Mexico, north along the coast as far, at least, as San Blas, Tepic, are, although averaging almost unappreciably paler below, practically the same, so far as we can discover, as those of New England; and the same is true of specimens available from southern Mexico, including Yucatan, from Guatemala, British Honduras, and Honduras. In size of both male and female, the birds from these Mexican and Central American localities are identical with those from Florida. The birds of all these localities, from Florida to Texas, Mexico, Guatemala, and Honduras, are seen to be really intermediate in size between *Butorides virescens virescens* and the Panama race hereinafter separated as *Butorides virescens hypnотius*;¹ and upon size (which is the only diagnostic character separating these two races) might with propriety be called either *B. v. virescens* or *B. v. hypnотius*; yet owing to the interruption of range, at least in western Nicaragua, caused by *Butorides virescens mesatus*,² they are seemingly better referred to the northern *Butorides virescens virescens*, at least until the status of the bird from eastern Nicaragua be determined. The identity of the form occurring on Ruatan Island, Honduras,³ and Cozumel Island, Yucatan,³ is somewhat doubtful, as we have seen no specimens from either locality, but the bird probably is that of the adjacent coast, that is, *Butorides virescens virescens*. The differences of size in various parts of the range of this subspecies may be readily appreciated from the following table of average measurements:

Localities.	Wing.	Tail.	Exposed culmen.	Height of bill at base.	Tarsus.	Middle toe.
Fourteen males, from Pennsylvania, New Jersey, Maryland, District of Columbia, Virginia, and Kansas.	mm. 181.1	mm. 66.5	mm. 60.9	mm. 12.1	mm. 53.0	mm. 45.0
Ten males, from Florida (mainland), southern Alabama, and southern Mississippi.	178.7	67.2	61.7	11.4	51.4	45.0
Twelve males, from the Dry Tortugas, Florida.	177.2	66.0	59.8	11.4	50.5	45.7
Three males, from southern Texas.	178.7	66.3	63.2	12.2	52.2	43.3
Two males, from Tamaulipas and Vera Cruz.	179.0	66.5	57.0	11.8	50.8	44.8
Four males, from Tepic, Colima, Guerrero, and Chiapas.	176.8	64.5	63.2	11.9	53.0	45.8
Thirteen females, from New York, Pennsylvania, New Jersey, Maryland, Virginia, Indiana, Missouri, and Kansas.	175.1	65.5	59.8	11.7	51.2	45.7
Nine females, from Florida (mainland) and southern Alabama.	178.7	66.9	61.4	11.3	51.4	44.7
Two probable females, from the Dry Tortugas, Florida.	160.5	61.0	58.3	11.0	48.8	44.0
One female, from southern Texas.	163.0	62.0	60.0	11.3	48.8	43.5
Seven females, from Tamaulipas, Vera Cruz, and Tabasco.	167.2	61.9	60.1	11.9	49.4	43.4
Three females, from Tepic, Guerrero, and Chiapas.	179.0	65.0	62.3	11.8	52.7	45.0

¹ See p. 549.² See p. 548.³ Sharpe, Cat. Birds Brit. Mus., vol. 26, 1898, p. 190.

An examination of these measurements discloses a curious relative difference between the sexes in different geographic areas: In the northeastern United States the females average smaller than the males; on the Florida mainland they are equal in size; in eastern Mexico they are decidedly smaller; and in western Mexico they are, if the sex determinations be reliable, as is probable, somewhat larger.

In the northern part of its range, *Butorides virescens virescens* is only a summer resident, but in Florida, central and southern Mexico, Guatemala, Honduras, and British Honduras, it remains throughout the year. In central Florida it has been found breeding as early as April 4.

In the Bermuda Islands it appears only in winter and the seasons of migration, and, therefore, so far as known, does not breed. It does not regularly visit the West India Islands, the only record there being a single, apparently accidental, individual (No. 169016, U.S. N.M.) obtained by Mr. A. B. Baker, February 16, 1899, at Fajardo, Porto Rico.

The green heron of the eastern United States was first described by Linnæus as *Ardea virescens*,¹ from "America," with the following diagnosis: "A[rdea] occipite subcristato, dorso viridi, pectore rufescente." His account was based on the "Ardea stellaris minor" of Sloane;² the "Ardea stellaris minor" of Ray;³ and the "Ardea stellaris minima" of Catesby.⁴ The descriptions of Sloane and Ray, however, apply, without much doubt, exclusively to *Ixobrychus exilis*, but Catesby's bird is the green heron, from "Virginia and Carolina."

Since Linnæus' diagnosis fits only the green heron, the name *Ardea virescens* should properly belong to that bird alone, notwithstanding the compositeness of the whole account. This makes Catesby's description⁵ the sole basis of the name, and since most of his birds came from the coast of South Carolina, it seems best to restrict the type-locality to that region, as I have done above.⁶ Two other names, *Ardea chloroptura* Boddaert⁷ and *Ardea ludoviciana* Gmelin,⁸ were founded on the bird from Louisiana, and, therefore, must be considered synonyms of *Butorides virescens virescens*.

Of this form 299 specimens have been examined, from the following localities, breeding records being indicated by an asterisk:

Alabama.—Mobile Bay,* Stevenson,* Montgomery,* Dothan.*

Connecticut.—Stamford.

District of Columbia.—Woodley Lane,* Washington,* Little River.*

¹ Syst. Nat., ed. 10, vol. 1, 1758, p. 144.

² Voyage to Islands of Madera, Barbadoes, Nieves, St. Christophers, and Jamaica, with natural history of those islands (=Natural History of Jamaica), vol. 2, 1725, p. 315.

³ Syn. Meth. Avium et Piscium, 1713, p. 189, No. 2 [lege No. 4].

⁴ Nat. Hist. Carolina, Florida, and Bahama Islands, vol. 1, 1731, p. 80, pl. 80.

⁵ Loc. cit.

⁶ See p. 534.

⁷ Tabl. Planch. Enlum., 1783, p. 54.

⁸ Syst. Nat., vol. 1, pt. 2, 1789, p. 630.

Florida.—Clearwater;* Tampa;* Thonotosassa (February 15); Alligator Bluff, Kissimmee River;* Lone Cabbage Palm, Kissimmee River;* Lake Kissimmee; Kissimmee; Fort Gardner (Kissimmee River); Lake Harney; Big Lake George; Hernando County (January); Tarpon Springs;* Dry Tortugas;* Micco (January 17); eastern peninsula, opposite Micco;* Florida Creek (February 22); Suwanee River; Suwanee River, Lafayette County; New Smyrna;* Amelia Island;* Eau Gallie (January 20, February 24); Fenholloway River; northern Brevard County.

Georgia.—Young Harris;* Nashville.

Illinois.—Mount Carmel; Rockland.

Indiana.—Vincennes;* English Lake.*

Iowa.—Winnebago County;* Lake Mills; Van Buren County, 5 miles northwest of Hillsboro.*

Kansas.—Western Kansas; Salt Creek;* Topeka.*

Maryland.—Laurel;* Cornfield Harbor;* Piney Point;* Washington Grove;* Frederick;* Hagerstown;* Kensington; Jefferson.

Massachusetts.—Hadley;* Melrose; Barnstable County;* Cambridge;* Concord.

Minnesota.—Fort Snelling.*

Mississippi.—Bay St. Louis.

Missouri.—Charleston;* Monteer (Shannon County).*

New Hampshire.—Hollis.*

New Jersey.—Princeton; Cape May; Beach Haven; Seven Mile Beach;* Haddonfield;* Squam Beach;* Plainfield;* Basking Ridge; Bound Brook; Orange;* Mount Ephraim.*

New York.—Oyster Bay;* Peterboro;* Hastings-on-Hudson;* Millers Place (Long Island)*; Yonkers; Mount Hope;* Long Island City;* Shelter Island;* New York City;* Speonk; Bay Shore (Long Island)*; Katonah;* Amityville;* Bath Beach (Long Island)*; Alder Creek;* Princes Bay (Staten Island)*; Pleasant Valley (Dutchess County); Good Ground (Long Island)*; Mount Sinai (Long Island)*.

North Carolina.—Bogue Bank; Fort Macon;* Hatteras.*

Ohio.—New Holland;* Berlin Heights.*

Oklahoma.—Sans Bois (Choctaw Country).

Pennsylvania.—Landisville;* Bristol;* McKees Gap;* Holmesburg (Philadelphia)*; Chestnut Hill (Philadelphia)*; Chester County;* Moscow (Lackawanna County)*; Carlisle; Erie; Marple (Delaware County)*.

Rhode Island.—Chepachet; Middletown; Pawtucket.*

South Carolina.—Porcher's Bluff (Christchurch Parish)*; l'On Swamp (Christchurch Parish)*; Wayne's Place (Christchurch Parish)*.

Tennessee.—Strawberry Plains.*

Texas.—Eagle Pass; Lee County,* Hidalgo,* Fort Stockton,* Ingram,* Pecos City,* Mouth of Pecos River; Brownsville,* Lomita.*

Virginia.—Smiths Island,* Four Mile Run; Arlington,* Matthews County.*

Chiapas.—Comitan; Tonalá.*

Colima.—Manzanillo.

Guerrero.—Papayo.

Jalisco.—Ocotlan.

Mexico (State).—San Mateo.

Michoacan.—Patzcuaro.*

Tabasco.—Montecristo.

Tamaulipas.—Alta Mira,* Tampico.

Tepic.—San Blas.*

Vera Cruz.—Boca del Rio,* Orizaba; Plan del Rio; Mirador; Rivera; 15 miles south of Rivera; 75 miles south of Rivera; Isla de los Frioles.

Yucatan.—Puerto Morelos.

British Honduras.—Belize.*

Guatemala.—Choctun (Vera Paz).

Honduras.—Ceiba.

Porto Rico.—Fajardo.

Measurements of specimens of *Butorides virescens virescens*.

Museum and No.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed culmen.	Height of bill at base.	Tarsus.	Middle toe.
A. N. S. Phila., 46392 ¹	Male	Chester Co., Pa.	May 12, 1891	H. Garrett	183.0	68.0	59.0	12.5	55.0	48.0
H. W. Fowler, 1031 ¹	do	Bristol, Bucks Co., Pa.	Nov. 26, 1895	W. Hall	180.0	65.0	58.0	11.0	52.5	48.5
H. W. Fowler, 1290 ¹	do	do	Apr. 15, 1897	F. F. Cartledge	182.0	65.0	61.5	12.0	54.0	45.0
A. N. S. Phila., 57339 ¹	do	Landisville, Pa.	Apr. 16, 1897	F. G. Meyers	183.0	71.0	61.5	13.0	53.0	47.0
A. N. S. Phila., 57340 ¹	do	do	Aug. 20, 1895	J. M. Trout	179.0	66.0	61.0	12.0	52.0	45.0
A. N. S. Phila., 35958 ¹	do	Mount Ephraim, N. J.	May 9, 1883	S. R. Rhoads	179.0	66.0	60.5	12.0	51.5	46.5
U. S. N. M., 176377 ¹	do	Laurel, Md.	May 13, 1889	S. R. Ridgway	182.0	70.0	62.0	12.0	55.0	47.0
U. S. N. M., 133315 ¹	do	Cornfield Harbor, Md.	July 20, 1894	do	183.0	66.0	69.0	12.0	52.0	46.0
U. S. N. M., 158049 ¹	do	Woodley Lane, D. C.	Aug. 22, 1897	G. G. Hubbard	188.0	69.0	60.0	12.5	51.0	47.0
U. S. N. M., 121371 ¹	do	Washington, D. C.	May 4, 1888	C. W. Richmond	176.0	67.5	58.0	12.3	51.5	45.0
U. S. N. M., 121372 ¹	do	do	May 6, 1887	do	178.0	65.0	61.0	12.0	51.8	44.3
U. S. N. M., 212871 ¹	do	Smiths Island, Va.	May 13, 1910	E. A. Mearns	178.0	61.5	61.5	12.0	53.0	47.5
U. S. N. M., 212872 ¹	do	do	do	do	182.0	63.0	58.0	11.5	52.5	45.0
U. S. N. M., 7068 ¹	do	Salt Creek, Kans.	May 28, 1857	W. S. Wood	182.0	68.5	61.0	13.0	57.0	48.0
U. S. N. M., 141466	Male, juvenal	Bay St. Louis, Miss.	Aug. 29, 1890	C. S. Brimley	171.0	62.5	60.0	11.5	51.5	44.5
U. S. N. M., 207803	Male	Mobile Bay, Ala.	May 12, 1911	A. H. Howell	176.0	65.0	62.0	11.5	49.5	44.5
U. S. N. M., 176843	do	Alligator Bluff, Kilsislee River, Fla.	Apr. 26, 1901	E. A. Mearns	173.0	65.0	61.0	11.5	49.5	41.0

¹ Used in measurement averages on p. 534.

Measurements of specimens of *Butorides virescens virescens*—Continued.

Museum and No.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed cul-	Height of bill	Tarsus.	Middle toe.
					mm	mm	men.	at base.	mm	mm
U.S.N.M., 176751.....	Male.....	Lone Cabbage Palm, Kissimmee River, Fla.	Apr. 5, 1901	E. A. Mearns.	180.0	68.0	61.0	10.0	52.5	42.5
U.S.N.M., 176842.....	do.....	do.....	do.....	do.....	191.0	72.0	66.0	11.0	54.0	47.0
U.S.N.M., 175626.....	do.....	Lake Kissimmee, Fla.	Mar. 27, 1901	do.....	175.0	63.0	62.0	11.0	53.0	45.5
U.S.N.M., 77293.....	do.....	Hernando County, Fla.	Mar. 29, 1877	J. A. Mason...	179.0	70.0	61.0	11.0	53.0	45.0
U.S.N.M., 152906.....	do.....	Lake Harney, Fla.	Mar. 21, 1896	J. C. Ingersoll	183.0	69.0	61.5	12.0	51.0	48.5
U.S.N.M., 162576.....	do.....	Big Lake George, Fla.	Mar. 26, 1886	E. M. Hasbrouck.	177.0	68.5	59.0	11.0	49.0	44.5
A. N. S. Phila., 27027...	do.....	Tarpon Springs, Fla.	Apr. 18, 1891	S. N. Rhoads.	181.5	69.0	63.0	13.0	50.5	47.0
Am. Mus. N. H., 49832...	do.....	Dry Tortugas, Fla.	Apr. 13, 1890	F. S. Goodman.	182.5	71.5	55.0	11.0	47.2	41.0
Am. Mus. N. H., 49834...	do.....	do.....	do.....	do.....	171.5	65.5	59.5	10.3	51.0	44.5
Am. Mus. N. H., 49836...	do.....	do.....	Apr. 14, 1890	do.....	181.5	71.5	58.0	10.8	50.3	45.5
Am. Mus. N. H., 49842...	do.....	do.....	Apr. 16, 1890	do.....	179.0	68.5	55.0	11.0	48.0	45.3
Am. Mus. N. H., 49847...	do.....	do.....	Apr. 20, 1890	do.....	172.0	61.0	59.8	11.5	49.5	44.0
Am. Mus. N. H., 49843...	do.....	do.....	Apr. 22, 1890	do.....	179.0	66.5	59.0	11.8	49.8	46.5
Am. Mus. N. H., 49846...	do.....	do.....	do.....	do.....	176.0	64.0	62.0	12.5	52.0	47.0
Am. Mus. N. H., 49844...	do.....	do.....	Apr. 24, 1890	do.....	178.0	65.0	65.0	11.8	50.0	49.5
Am. Mus. N. H., 49840...	do.....	do.....	Apr. 29, 1890	do.....	175.0	64.0	63.2	12.5	50.5	45.5
Am. Mus. N. H., 49837...	do.....	do.....	Apr. 30, 1890	do.....	175.0	65.0	60.5	10.5	52.0	47.5
Am. Mus. N. H., 49839...	do.....	do.....	May 1, 1890	do.....	174.0	62.0	58.5	10.8	53.5	45.0
Am. Mus. N. H., 49845...	do.....	do.....	Apr. 22, 1890	do.....	183.0	68.0	62.0	11.8	52.5	47.5
Am. Mus. N. H., 79750...	do.....	Hidalgo, Tex.	May 24, 1889	do.....	180.0	65.0	65.0	13.0	51.0	43.0
U.S.N.M., 141463.....	do.....	Brownsville, Tex.	Aug. 1, 1891	W. Lloyd.....	179.0	67.0	63.0	12.0	50.0	42.5
U.S.N.M., 141464.....	do.....	do.....	July 19, 1891	do.....	177.0	67.0	61.5	11.5	55.5	44.5
U.S.N.M., 193616.....	do.....	Tampico, Tamaulipas, Mex.	Apr. 10, 1904	S. E. Piper, C. Sheldon, and L. C. Sanford.	180.0	69.5	58.0	11.5	53.0	44.5
J. Dwight, 24629.....	do.....	Bocadel Rio, Vera Cruz, Mex.	June 15, 1897	P. M. Shufeldt.	178.0	63.5	56.0	12.0	48.5	45.0
U.S.N.M., 157360.....	do.....	San Blas, Tepic, Mex.	June 8, 1897	E. W. Nelson and E. A. Goldman.	175.0	65.5	64.0	11.8	53.0	46.5
U.S.N.M., 141547.....	do.....	Manzanillo, Colima, Mex.	Feb. 8, 1892	do.....	172.0	61.0	61.3	12.0	53.0	45.0
U.S.N.M., 185416.....	do.....	Papayo, Guerrero, Mex.	Apr. 6, 1903	do.....	179.0	65.0	62.5	12.0	53.0	46.5
U.S.N.M., 141545.....	do.....	Tonila, Chiapas, Mex.	Aug. 3, 1895	do.....	181.0	66.5	65.0	12.0	53.0	45.0
E. A. and O. Bangs, 10538	do.....	Ceiba, Honduras.	Jan. 14, 1902	W. W. Brown, jr.	174.0	67.0	59.5	11.5	51.0	41.0
U.S.N.M., 169016.....	do.....	Fajardo, Porto Rico.	Feb. 16, 1899	A. B. Baker..	179.0	66.5	60.0	11.5	49.0	42.5
U.S.N.M., 172436 1.....	Female..	Peterboro, N. Y.	July 7, 1900	G. S. Miller, jr.	172.0	67.0	60.0	11.5	51.5	45.5
Am. Mus. N. H., 36225 1	do.....	Bath Beach, Long Island, N. Y.	Aug. 6, 1889	do.....	176.0	68.0	59.0	12.0	51.0	44.0
Am. Mus. N. H., 64827 1	do.....	Long Island City, N. Y.	May 5, 1888	W. Dutcher..	173.5	68.0	60.0	12.0	51.0	45.0
Am. Mus. N. H., 104883 1	do.....	Bay Shore, N. Y.	June 15, 1909	H. C. Raven..	183.0	70.0	62.5	11.5	49.5	45.0
Am. Mus. N. H., 60736 1	do.....	Orange, N. J.	May 2, 1894	I. N. Travis, jr.	183.5	64.5	61.5	12.5	51.5	46.5
U.S.N.M., 131201 1.....	[Female]	Princeton, N. J.	Spring, 1882	G. S. Nicholas	171.0	59.0	57.5	9.0	48.0	45.5
A. N. S. Phila., 33731 1	Female..	Marple, Delaware Co., Pa.	May 4, 1880	S. N. Rhoads.	172.0	62.5	60.5	12.0	52.0	45.0
A. N. S. Phila., 46393 1	do.....	Chester Co., Pa.	May 14, 1890	H. Garrett...	172.0	62.0	62.0	11.0	50.0	44.0
U.S.N.M., 176376 1.....	do.....	Laurel, Md.	May 7, 1889	R. Ridgway..	174.0	68.0	61.0	12.0	53.0	44.0
U.S.N.M., 212718 1.....	do.....	Smiths Island, Va.	May 20, 1910	J. H. Riley...	175.0	64.0	56.0	12.0	50.0	49.0

1 Used in measurement averages on p. 534.

Measurements of specimens of *Butorides virescens virescens*—Continued.

Museum and No.	Sex.	Locality.	Date.	Collector.	Wing.		Tail.		Exposed culmen.	Height of bill at base.	Tarsus.	Middle toe.
					mm	mm	mm	mm				
U.S.N.M., 118433 ¹	Female.	Vincennes, Ind.	May 5, 1890	R. Ridgway..	176.0	66.0	62.0	12.0	52.0	45.5		
M. C. Z., 42583 ¹	do.....	Charleston, Mo.	May 12, 1879	W. S. Bryant.	170.0	58.5	56.0	12.3	50.5	47.0		
M. C. Z., 15227 ¹	do.....	Topeka, Kans.	May 22, 1871	.....	178.0	74.5	59.5	12.8	55.0	48.0	
U.S.N.M., 207855.....	do.....	Dothan, Ala.	June 6, 1911	A. H. Howell.	184.5	70.0	62.0	11.0	52.0	44.5		
U.S.N.M., 176841.....	do.....	Alligator Bluff, Kissimmee River, Fla.	Apr. 26, 1901	E. A. Mearns.	178.0	65.0	64.0	11.0	52.0	46.5		
U.S.N.M., 176845.....	do.....	do.....	Apr. 8, 1901	.....do.....	176.0	65.0	64.0	11.0	50.0	44.0	
U.S.N.M., 176752.....	do.....	Lone Cabbage Palm, Kissimmee River, Fla.	Apr. 6, 1901	.....do.....	175.0	65.0	59.0	11.5	51.5	44.5	
U.S.N.M., 176844.....	do.....	do.....	Apr. 4, 1901	.....do.....	175.0	65.0	59.0	10.5	51.0	45.0	
Am. Mus. N. H., 99480.....	do.....	Fenholloway River, Fla.	Mar. 20, 1907	F. M. Chapman.	174.0	65.0	61.0	11.8	55.0	45.5		
Am. Mus. N. H., 26830.....	do.....	Kissimmee, Fla.	Nov. 18, 1883	C. J. Maynard	185.0	68.5	63.0	12.2	51.5	44.5		
J. Dwight, 13375.....	do.....	Northern, Brevard Co. Fla.	Mar. 23, 1905	W. W. Worthington.	176.5	67.5	62.0	11.5	49.5	43.5		
J. Dwight, 16290.....	do.....	Amelia Island, Fla.	Mar. 24, 1906	.....do.....	184.0	71.0	58.5	11.0	50.5	44.5	
Am. Mus. N. H., 49838.....	[2]	Dry Tortugas, Fla.	Apr. 11, 1890	F. S. Goodman.	161.0	61.0	58.5	11.0	49.5	45.0		
Am. Mus. N. H., 49833.....	[2]	do.....	Apr. 19, 1890	.....do.....	160.0	61.0	58.0	11.3	48.0	43.0	
Am. Mus. N. H., 79748.....	Female.	Lomita, Tex.	July 9, 1880	.....	163.0	62.0	60.0	11.3	48.8	43.5	
Am. Mus. N. H., 79752.....	do.....	Alta Mira, Tamaulipas, Mex.	May 17, 1888	.....	160.0	63.0	60.0	12.0	49.0	46.0	
U.S.N.M., 193612.....	do.....	75 miles south of Rivera, Vera Cruz, Mex.	Apr. 17, 1904	S. E. Piper, C. Sheldon, and L. C. Sanford.	174.0	66.0	63.0	11.9	51.5	45.0		
U.S.N.M., 193615.....	do.....	Rivera, Vera Cruz, Mex.	Apr. 13, 1904	.....do.....	168.0	58.0	64.0	12.3	51.0	44.0	
U.S.N.M., 193613.....	do.....	do.....	do.....	.....do.....	163.0	59.0	58.0	11.5	47.0	43.0	
U.S.N.M., 193614.....	do.....	do.....	Apr. 27, 1904	.....do.....	169.0	67.0	61.0	12.0	52.0	44.0	
U.S.N.M., 193617.....	do.....	Isla de los Frijoles, Vera Cruz, Mex.	Apr. 26, 1904	.....do.....	166.5	60.0	56.0	11.5	47.5	42.5	
U.S.N.M., 166354.....	do.....	Monteristo, Tabasco, Mex.	May 7, 1900	E. W. Nelson and E. A. Goldman.	170.0	60.0	58.5	12.0	48.0	39.0		
U.S.N.M., 185420.....	do.....	Papayo, Guerrero, Mex.	Apr. 20, 1903	.....do.....	177.0	62.0	64.0	11.5	52.5	44.5	
U.S.N.M., 193841.....	do.....	Comitan, Chiapas, Mex.	Mar. 29, 1904	.....do.....	180.0	66.0	60.5	12.0	53.0	46.0	
J. Dwight, 24009.....	do.....	San Blas, Tepic, Mex.	Apr. 8, 1909	P. I. Osburn.	180.0	67.0	62.5	12.0	52.5	44.5		
A. N. S. Phila., 26034.....	do.....	Winnebago County, Iowa.	Aug. 15, 1881	W. L. Abbott.	183.0	67.5	59.5	12.0	50.5	44.5		
U.S.N.M., 4154.....	do.....	Brownsville, Tex.	.....	S. Van Vliet..	172.0	68.5	60.0	11.7	.....	.....
U.S.N.M., 130317.....	do.....	Yucatan.....	.....	G. F. Gaumer.	177.0	62.5	62.0	11.0	51.0	46.0	
U.S.N.M., 130315.....	do.....	do.....	.....	.....do.....	171.5	63.0	60.0	11.5	49.5	45.0	
U.S.N.M., 130319.....	do.....	do.....	.....	.....do.....	169.5	62.5	62.5	12.2	53.0	48.5	
U.S.N.M., 130318.....	do.....	do.....	.....	.....do.....	171.0	62.0	60.5	12.0	47.0	44.0	
U.S.N.M., 28068.....	do.....	Mirador, Vera Cruz, Mex.	.....	C. Sartorius..	171.0	63.5	58.5	10.5	51.0	43.0	
M.C.Z., 31778.....	do.....	Orizaba, Vera Cruz, Mex.	.....	P. M. Toro...	175.0	63.0	61.0	12.0	53.0	47.0	

¹ Used in measurement averages on p. 534.² "Male" on the label of the specimen, but this is probably wrong.

BUTORIDES VIRESCENS FRAZARI (Brewster).

Ardea virescens frazari BREWSTER, Auk, vol. 5, January, 1888, p. 83 (La Paz, Lower California).

Chars. subsp.—Resembling *Butorides virescens virescens*, but hind neck, sides of neck, and foreneck, darker, more purplish, less maroon; breast and posterior lower parts darker; edgings of superior wing-coverts darker; upper surface of body averaging duller and more deeply colored; average size very slightly greater.

Measurements.—Male:¹ Wing, 176–189 (average, 183.2) mm.; tail, 63–72.5 (69.2); exposed culmen, 60.5–66.5 (63.7); height of bill at base, 11–13.5 (12.3); tarsus, 51–58 (53.8); middle toe, 44–48.5 (47.3).

Female:² Wing, 176.5–182.5 (180.0); tail, 66.5–73.5 (70.0); exposed culmen, 62.5–66.5 (64.9); height of bill at base, 12–13 (12.5); tarsus, 51–56 (52.9); middle toe, 46–47.5 (46.8).

Type-locality.—La Paz, Lower California, Mexico.

Geographical distribution.—Southern and central Lower California: south to La Paz, southern Lower California; and north to San Ignacio, central Lower California.

The juvenal plumage is very deeply colored, particularly on the lower parts, and differs from the corresponding stage of *Butorides virescens virescens* in its darker hind neck, foreneck, sides of neck, and streaks of lower parts.

In the series of adults examined the colors are very uniform. The female averages somewhat smaller than the male. This race occupies a restricted area in southern and central Lower California, where it is apparently resident throughout the year. Its center of distribution appears to be the vicinity of La Paz Bay, but it has occurred as far north as San Ignacio, in the central portion of the peninsula (north and south); and a single adult male from the latter locality (No. 196339, U.S.N.M.), taken October 11, 1905, by Messrs. E. W. Nelson and E. A. Goldman, is practically typical.

Fourteen specimens examined, from the localities below, breeding records being indicated by an asterisk:

Lower California.—La Paz;* San Ignacio; San Jose Island;* Puerto Balandra.

¹ Ten specimens, from southern Lower California.

² Four specimens from southern Lower California.

Measurements of specimens of Butorides virescens frazari.

Museum and number.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed culmen.	Height of bill at base.	Tarsus.	Middle toe.
U.S.N.M., 197889 ¹	Male, juvenal.	La Paz ²	Feb. 5, 1906	E. W. Nelson and E. A. Goldman.	176.0	63.0	63.5	12.0	54.0	48.0
U.S.N.M., 197890 ¹	Male.....	do.....	do.....	do.....	189.0	71.5	64.5	12.5	54.0	48.5
U.S.N.M., 197892 ¹	do.....	do.....	Feb. 15, 1906	do.....	189.0	71.0	64.5	12.5	54.0	48.0
U.S.N.M., 197893 ¹	do.....	do.....	Feb. 16, 1906	do.....	181.0	72.5	60.5	12.5	52.5	45.0
U.S.N.M., 197894 ¹	do.....	do.....	do.....	do.....	182.0	70.5	63.3	11.0	55.0	48.0
U.S.N.M., 197896 ¹	do.....	do.....	Feb. 18, 1906	do.....	189.0	72.0	66.5	12.8	52.0	47.5
U.S.N.M., 196339 ¹	do.....	San Ignacio ²	Oct. 11, 1905	do.....	178.0	65.0	61.0	11.5	53.5	44.0
U.S.N.M., 112603 ¹	do.....	La Paz ²	Feb. 14, 1887	M. A. Frazar.	185.0	66.0	63.5	12.0	58.0	48.5
E. A. and O. Bangs, 20283. ¹	do.....	do.....	Mar. 2, 1908	W. W. Brown, jr.	180.0	71.0	66.2	12.3	54.0	48.0
E. A. and O. Bangs, 20281. ¹	do.....	San Jose Island, ²	June 19, 1908	do.....	182.5	69.0	63.5	13.5	51.0	47.0
U.S.N.M., 197891 ¹	Female.	La Paz ²	Feb. 15, 1906	E. W. Nelson and E. A. Goldman.	179.0	66.5	66.5	12.8	56.0	46.5
U.S.N.M., 197895 ¹	do.....	do.....	Feb. 17, 1906	do.....	176.5	70.5	62.5	13.0	53.0	46.0
U.S.N.M., 197888 ¹	do.....	do.....	Feb. 5, 1906	do.....	182.5	73.5	65.0	12.0	51.5	47.0
E. A. and O. Bangs, 20282. ¹	do.....	Puerto Balandra, ²	May 18, 1908	W. W. Brown, jr.	182.0	69.5	65.5	12.0	51.0	47.5

BUTORIDES VIRESCENS ANTHONYI (Mearns).

Ardea virescens anthonyi MEARNS, Auk, vol. 12, July, 1895, p. 257 (Seven Wells, Lower California).

Chars. subsp.—Similar to *Butorides virescens virescens*, but much larger; posterior lower parts much paler; foreneck more cinnamonous or fulvescent; upper surface of body and hind neck lighter, the green of body duller, the chestnut of neck more fulvescent.

Measurements.—Male:³ Wing, 186–202 (average, 196) mm.; tail, 67–79 (72.8); exposed culmen, 57.8–64 (61.0); height of bill at base, 11–13.5 (12.3); tarsus, 51–56.5 (53.9); middle toe, 43.5–49 (47.7).

Female:⁴ Wing, 180–196 (189.7) mm.; tail, 63–74.5 (69.6); exposed culmen, 57–62 (60.2); height of bill at base, 10.5–13 (11.8); tarsus, 48–54.5 (52.5); middle toe, 43–48 (45.5).

Type-locality.—Seven Wells, Salton River, northern Lower California, Mexico.

Geographical distribution.—Southwestern United States and through Mexico to Costa Rica: in summer, north to Fort Klamath, Oregon; and Big Sandy, Arizona; east to Murphy and Little Owens Lake, east central California; Camp Verde, central Arizona; and Bisbee, southeastern Arizona; south to the San Bernardino River and the San Pedro River, northern Sonora; and Seven Wells, Salton River, northern lower California; west to Los Coronados Islands, northwestern Lower California; Santa Barbara, Ukiah, and Yreka, western

¹ Used in measurement averages on p. 542.

² Lower California, Mexico.

³ Fifteen specimens, from California, Arizona, northern Sonora, and northern Lower California.

⁴ Eleven specimens, from California, Arizona, northern lower California, and Costa Rica.

California. In migration east to Victoria, central Tamaulipas; in winter from southern Lower California and central Mexico south to El Limon, western Guerrero; Tehuantepec, southeastern Oaxaca; and San José, central Costa Rica.

This is one of the best characterized forms of the species. From *Butorides virescens frazari* it differs as from *Butorides virescens virescens*, only much more strongly. Freshly molted or winter birds are sometimes rather dark, but the cinnamonaceous or rufous tint of the neck, coupled with large size, easily distinguishes such specimens. The female is decidedly smaller than the male. The young in juvenal plumage may be distinguished from that of *Butorides v. virescens* by reason of its paler, more grayish or brownish upper body surface; lighter, more cinnamon rufous hind neck and foreneck; and paler lower parts with narrower and less numerous streaks.

Birds from central California seem to be identical in color with those from Arizona; also in size, as the following comparison of average measurements indicates:

Localities.	Wing.	Tail.	Ex- posed culmen.	Height of bill at base.	Tarsus.	Middle toe.
Eleven males, from Arizona, Sonora, Lower California, and extreme southeastern California.....	mm. 196.3	mm. 72.9	mm. 60.8	mm. 12.2	mm. 53.3	mm. 47.5
Four males, from central California.....	195.5	72.8	61.8	12.7	55.4	48.0
Nine females, from Arizona, Lower California, Costa Rica, and extreme southeastern California.....	189.9	70.3	60.3	11.8	52.6	45.7
Two females, from central California.....	189.0	66.5	59.8	12.0	52.0	45.0

There are published records from northern Oregon and from Washington, but I have seen no specimens, and these records seem somewhat doubtful. This subspecies is only a summer sojourner in the United States, and retires to central and southern Mexico to pass the winter, where it remains, at least sometimes, until the beginning of April. A single adult female (No. 16376, collection of A. E. and O. Bangs), taken by Mr. C. F. Underwood, on November 27, 1896, in the vicinity of San José, Costa Rica, must be regarded as a straggler, for this subspecies is otherwise not known south of Mexico.

Specimens to the number of 70 have been seen, from the subjoined localities, breeding records being indicated by an asterisk:

Arizona.—Big Sandy Creek;* Johnston's Ranch, 7 miles south of Bisbee; San Bernardino Ranch (Mexican boundary line); Phoenix;* Fort Verde;* Beaver Creek (Fort Verde);* Gila River at mouth of San Carlos River; Verde River.*

California.—Sacramento;* Unlucky Lake (San Diego County);* Red Bluff;* Stockton; Yreka;* Yuma; Escondido; Biggs (Butte County);* Marysville;* Tulare Lake;* Berryessa; San Gabriel.

Guerrero.—El Zopilote; El Limon.

Jalisco.—Ocotlan (December 28).

Lower California.—Seven Wells, Salton River;* Gardner's Laguna;* San Quintin; San Fernando; San Ignacio; San Jose del Cabo

(January 8).

Mexico (State).—Valley of Mexico.

Michoacan.—Los Reyes (February 18); Tupátaro.

Oaxaca.—Tehuantepec.

Sonora.—San Pedro River (near the United States boundary line);* San Bernardino River (near the United States boundary line).

Tamaulipas.—Victoria.

Vera Cruz.—Orizaba.

Costa Rica.—Vicinity of San José.

Measurements of specimens of *Butorides virescens anthonyi*.

Museum and number.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed cul-	Height of bill	Tarsus.	Middle toe.
					mm	mm	men.	at base.	mm	mm
U.S.N.M., 112438 ¹	Male	Arizona	Apr. 20, 1887	E. A. Mearns.	194.0	71.0	59.0	11.0	52.0	45.0
Am. Mus. N. H., 51059 ¹	do	Fort Verde (Verde River), Ariz.	May 9, 1887	do	195.5	75.0	63.0	12.0	51.0	47.0
Am. Mus. N. H., 51060 ¹	do	Fort Verde (Beaver Creek), Ariz.	May 17, 1888	do	194.0	73.5	58.0	13.5	52.5	47.0
Am. Mus. N. H., 51061 ¹	do	do	do	do	198.0	75.0	59.0	12.0	52.5	48.0
Am. Mus. N. H., 61168 ¹	do	Seven Wells, Salton River, L. Cal.	Apr. 17, 1894	F. X. Holzner	187.0	71.0	63.5	11.0	52.5	47.0
U.S.N.M., 135576 ¹	do	do?	Apr. 12, 1894	E. A. Mearns.	197.0	71.5	57.8	13.0	55.0	48.0
U.S.N.M., 133730 ¹	do	do	Apr. 13, 1894	do	202.0	73.0	62.5	13.1	54.5	48.5
U.S.N.M., 135574 ¹	do	Gardner's Laguna, Salton River, L. Cal.	Apr. 20, 1894	do	198.0	70.0	62.0	12.0	55.0	48.0
U.S.N.M., 131557 ¹	do	San Pedro River, Sonora, Mex.	July 29, 1893	do	200.0	79.0	62.5	13.2	54.0	47.0
U.S.N.M., 134768 ¹	do	Unlucky Lake, San Diego County, Cal.	Apr. 30, 1894	do	198.0	72.5	60.0	12.7	53.5	48.5
U.S.N.M., 134769 ¹	do	do	do	F. X. Holzner.	196.0	70.0	61.3	11.0	54.0	48.0
U.S.N.M., ——— ¹	do	Marysville, Cal.	May 12, 1884	W. F. Peacock	200.0	75.0	64.0	12.5	55.0	47.5
U.S.N.M., ——— ¹	do	Stockton, Cal.	—, 1879	L. Belding	196.0	74.0	61.0	12.5	56.5	47.5
U.S.N.M., 203418 ¹	do	Biggs, Cal.	July 13, 1906	A. S. Bunnell	186.0	67.0	61.5	—	55.0	49.0
U.S.N.M., 204272 ¹	do	Tulare Lake, 9 miles east of Lemoore, Cal.	June 20, 1907	E. A. Goldman.	200.0	75.0	60.5	13.0	55.0	48.0
U.S.N.M., 141468 ¹	Female	Phoenix, Ariz	May 1, 1889	V. Bailey	180.0	70.0	61.5	11.5	48.0	43.0
Am. Mus. N. H., 51047 ¹	do	Fort Verde, Ariz.	Sept. 23, 1884	E. A. Mearns.	189.0	72.0	61.0	11.5	54.0	47.0
Am. Mus. N. H., 51058 ¹	do	Fort Verde (Verde River), Ariz.	May 7, 1887	do	188.0	68.5	58.0	11.0	53.0	48.0
Am. Mus. N. H., 51050 ¹	do	do	July 25, 1885	do	194.0	70.5	61.0	10.5	52.0	48.0

¹ Used in measurement averages on p. 543.

² Type; original number, 10529.

Measurements of specimens of *Butorides virescens anthonyi*—Continued.

Museum and number.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed culmen.	Height of bill at base.	Tarsus.	Middle toe.
U.S.N.M., 135575 ¹	Female.	Gardner's Laguna, Salton River, L. Cal.	Apr. 25, 1894	E. M. Mearns.	mm 185.0	mm 69.0	mm 62.0	mm 12.5	mm 53.0	mm 43.0
U.S.N.M., 133731 ¹	do.....	do.....	do.....	do.....	192.0	70.0	57.0	12.0	54.0	44.5
E. A. and O. Bangs, 16736. ¹	do.....	Vicinity of San Jose, Costa Rica.	Nov. 27, 1896	C. F. Underwood.	195.0	71.0	61.0	13.0	54.5	47.0
U.S.N.M., 133732 ¹	do.....	Unlucky Lake, San Diego County, Cal.	May 2, 1894	E. A. Mearns.	196.0	74.5	60.0	11.5	52.5	45.0
U.S.N.M., 134770 ¹	do.....	do.....	Apr. 30, 1894	F. X. Holzner.	190.0	67.0	61.0	12.3	52.0	45.5
U.S.N.M., 204273 ¹	do.....	Tulare Lake, 9 miles east of Lemoore, Cal.	June 21, 1907	E. A. Goldman.	187.0	70.0	60.5	12.0	52.0	43.5
U.S.N.M., 49534 ¹	do.....	Sacramento, Cal.	June 10, 1867	R. Ridgway..	191.0	63.0	59.0	12.0	52.0	46.5
U.S.N.M., 125329.....	do.....	Berryessa, Cal.	.....	R. H. Beck..	195.0	74.0	58.5	12.5	52.0	49.5
U.S.N.M., 98487.....	do.....	Red Bluff, Cal.	May 9, 1884	C. H. Townsend.	193.0	68.0	.....	.....	51.0	47.0

¹ Used in measurement averages on p. 543.

BUTORIDES VIRESCENS EREMONOMUS,¹ new subspecies.

Chars. subsp.—Much like *Butorides virescens anthonyi*, but smaller in all measurements; neck and sides of head darker, less fulvescent (somewhat more purplish).

Description.—Type, adult male, No. 124540, U.S.N.M., San Diego, Chihuahua, Mexico, June 11, 1891; Frank Robinette. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy bottle green; malar stripe cream buff; submalar stripe chestnut, mixed with blackish brown; cheeks, auriculars, sides and back of neck, chestnut, decidedly purplish posteriorly, and somewhat paler anteriorly; upper surface of body deep, glossy bottle green, the long, pointed, plume-like feathers of back and scapulars somewhat bluish distally, the outer scapulars narrowly margined exteriorly with tawny; wings fuscous, the primaries and outer secondaries tinged with bluish green on exposed portions, the greater coverts and a few of the inner primaries with white tips; tertials, outer webs of inner secondaries, with greater, median, and lesser wing-coverts, grayish or brownish bottle green; lesser and median wing-coverts margined rather narrowly all around with ochraceous or buff, the greater coverts, outer webs of tertials and innermost secondaries, with white; tail dull, dark, grayish blue-green; chin and middle of upper throat buffy white, medially streaked with dark blackish brown; jugulum purplish chestnut, conspicuously streaked with creamy

¹ The gender of *Butorides* is masculine, not feminine, as appears to be the general impression.

white and dark brown; breast, sides, and axillars rather light gray, about No. 7,¹ with a slight brownish tinge; abdomen and crissum much paler gray, somewhat mixed with whitish, particularly on latter, which have slate-colored terminal or subterminal spots or blotches; thighs pale gray, with an ochraceous tinge exteriorly; lining of wing mottled pale gray and white, with a slight buffy wash, the edge of wing broadly white.

Measurements.—Male:² Wing, 181–183 (average, 182) mm.; tail, 65–67.5 (66.3); exposed culmen, 57.5–63 (60.3); height of bill at base, 11–12.5 (11.8); tarsus, 51.5–52.5 (52); middle toe, 46.5–48 (47.3).

Female: Wing,³ 182 mm.; tail, 65; exposed culmen, 54; height of bill at base, 12; tarsus, 50; middle toe, 46.

Type-locality.—San Diego, Chihuahua, Mexico.

Geographical distribution.—Northern central Mexico: north to San Diego, central Chihuahua; south to Rio Sestin, northwestern Durango; and in winter to Los Reyes, western Michoacan.

The present form is distinguishable from *Butorides virescens virescens* by its much paler posterior lower parts, and more maroon tinged, less purplish, and somewhat lighter neck and sides of head. Although we have examined only a small number of specimens, the characters exhibited by them seem to separate them subspecifically from both *Butorides virescens virescens* and *Butorides virescens anthonyi*, the forms which are geographically nearest. A single immature female (No. 185244, U.S.N.M.) from Los Reyes, Michoacan, taken February 12, 1903, is apparently of this race, indicating its probable winter range.

Three specimens have been available, from the following places, breeding birds with an asterisk:

Chihuahua.—San Diego.*

Durango.—Rio Sestin.*

Michoacan.—Los Reyes (February 12).

Measurements of specimens of Butorides virescens cremonomus.

Museum and number.	Sex.	Date.	Wing.	Tail.	Ex- posed cul- men.	Height of bill at base.	Tarsus.	Middle toe.
U.S.N.M., 124540 ⁴	Male ⁵	June 11, 1891	<i>mm.</i> 181.0	<i>mm.</i> 67.5	<i>mm.</i> 63.0	<i>mm.</i> 12.5	<i>mm.</i> 51.5	<i>mm.</i> 46.5
Am. Mus. N. H., 91969 ⁴	do ⁶	May 3, 1903	183.0	65.0	57.5	11.0	52.5	48.0
U.S.N.M., 185244 ⁴	Female, juvenal. ⁷	Feb. 12, 1903	182.0	65.0	54.0	12.0	50.0	46.0

¹ Of Mr. Ridgway's Nomenclature of Colors, 1886.

² Two specimens, from Chihuahua and Durango.

³ One specimen, from Michoacan, Mexico.

⁴ Used in measurement averages on p. 547.

⁵ Type, from San Diego, Chihuahua, Mexico, collected by F. Robnette.

⁶ From Rio Sestin, Durango, Mexico, collected by J. H. Batty.

⁷ From Los Reyes, Michoacan, Mexico, collected by E. W. Nelson and E. A. Goldman.

BUTORIDES VIRESCENS MESATUS, new subspecies.

Chars. subsp..—Similar to *Butorides virescens eremonomus*, but wing and tail shorter; neck, sides of head, and posterior lower parts paler.

Description..—Type, adult female, No. 151366, U.S.N.M; Managua, Nicaragua; Charles E. Kern. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy bottle green; malar stripe buffy white; submalar stripe chestnut mixed with blackish brown; cheeks, auriculars, sides and back of neck, chestnut, more rufescent and paler anteriorly, more purplish posteriorly; upper surface of body deep bottle green, somewhat glossy, the long, pointed, plume-like feathers of back and scapulars somewhat glaucous bluish; wings fuscous, the primaries and outer secondaries dull, dark, greenish-blue slate color, the inner primaries and outer secondaries tipped with white; tertials, outer webs of inner secondaries, with greater, median, and lesser wing-coverts, dark, glossy bottle green; the first rows of lesser wing-coverts margined rather narrowly with tawny, the other rows and the median coverts with ochraceous buff, the greater coverts and outer webs of tertials and innermost secondaries with buff or cream white; tail fuscous, all the exposed portions, except the middle feather, glossy bottle green; chin and middle of upper throat white, medially rather sparingly streaked with dark brown; jugulum purplish chestnut, a little lighter than the hind neck, conspicuously and broadly streaked with white, and slightly with dull, dark brown; breast, sides, crissum, and axillars, smoke gray; abdomen and crissum paler gray, even whitish; longest under tail-coverts with dark brownish gray distal markings; thighs pale brownish gray; lining of wing pale gray, mottled with white, ochraceous, and buff, the edge of wing broadly cream white.

Measurements..—Male:¹ Wing, 169 mm.; tail, 63; exposed culmen, 61.5; height of bill at base, 12.5; tarsus, 49; middle toe, 44.

Female:² Wing, 164; tail, 61; exposed culmen, 62; height of bill at base, 12.5; tarsus, 50.5; middle toe, 44.5.

Type-locality..—Managua, Nicaragua.

Geographical distribution..—Western Nicaragua, probably north to Momotombo, and probably south to Ometepe and San Juan del Sur.

From *Butorides virescens anthonyi* it may be separated by much shorter wing and tail, somewhat paler posterior lower parts, and more purplish (less fulvescent) neck; and from *Butorides virescens virescens* by shorter wing, much lighter posterior under parts, and paler, more maroon tinged (less purplish) neck. A specimen in juvenal plumage is apparently indistinguishable from juvenal examples of *Butorides virescens anthonyi*.

¹ One specimen, from western Nicaragua.

² One specimen (the type), from western Nicaragua.

The only adults examined are from Managua, in western Nicaragua, but it is fair to assume that this is the form of all western Nicaragua, where it is apparently resident, at least as far north as Momotombo,¹ and as far south as Ometepe Island² and San Juan del Sur,³ possibly even to the Bay of Salinas,⁴ in extreme northwestern Costa Rica. To what form, however, belong the birds from eastern Nicaragua, whence records exist of some green heron, at the Escondido River⁵ and the Bluefields River,⁶ it is unsafe to hazard a guess, and the examination of specimens must decide. It may be the present form, or *Butorides virescens virescens*, or even *Butorides virescens hypernotius*.⁷

Only three specimens have been seen, both from Managua, Nicaragua.

Measurements of specimens of Butorides virescens mesatus.

Museum and number.	Sex.	Collector.	Wing.	Tail.	Ex- posed culmen.	Height of bill at b se.	Tarsus.	Middle toe.
U.S.N.M., 151365 ⁸	Male ⁹	C. E. Kern...	mm. 169.0	mm. 63.0	mm. 61.5	mm. 12.5	mm. 49.0	mm. 44.0
A. N. S. Phila., 26590.....	Male, juve- nal. ¹⁰	.....	174.0	65.0	57.5	10.8	55.0	46.0
A. N. S. Phila., 151366 ⁸	Female ¹¹ ..	C. E. Kern...	164.0	61.0	62.0	12.5	50.5	44.5

BUTORIDES VIRESCENS HYPERNOTIUS, new subspecies.

Chars. subsp.—Like *Butorides virescens virescens*, but wing, tail, and tarsus of male shorter; barely distinguishable in color, but posterior lower parts averaging slightly paler; neck slightly less purplish.

Description.—Type, adult male, No. 206342, U.S.N.M., Biological Survey collection; Rio Indio, near Gatun, Canal Zone, Panama, February 16, 1911; E. A. Goldman; original number, 13736. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy bottle green; malar stripe buff; submalar stripe black and purplish maroon; cheeks, auriculars, sides and back of neck, purplish maroon, somewhat more rufescent anteriorly, somewhat glaucous posteriorly; upper surface of body deep bottle green, rather glossy, the long, pointed, plume-like feathers of back and scapulars more oily green and a little glaucous; wings fuscous, the primaries and outer secondaries dull, dark, greenish-blue slate color, the inner primaries and outer secondaries narrowly tipped with white; tertiaries,

¹ Sharpe, Cat. Birds Brit. Mus., vol. 26, 1898, p. 190.

² Ridgway, Proc. U. S. Nat. Mus., vol. 6, 1883 (1884), p. 396.

³ Idem, p. 379.

⁴ Salvin and Godman, Biol. Cent. Amer., Aves., vol. 3, 1901, p. 170.

⁵ Richmond, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 527.

⁶ Sclater and Salvin, Proc. Zool. Soc. London, 1867, p. 280.

⁷ See p. 549.

⁸ Used in measurement averages on p. 548.

⁹ From Managua, Nicaragua.

¹⁰ From Nicaragua.

¹¹ Type, also from Managua, Nicaragua.

outer webs of inner secondaries, with greater, median, and lesser wing-coverts, dark, slightly glossy bottle green; the first rows of lesser wing-coverts margined all around with tawny, the other rows, the median coverts, and outer webs of tertiaries, with ochraceous buff, the greater coverts and outer webs of innermost secondaries with cream buff or whitish; tail dark, glossy bottle green; chin and middle of upper throat cream white, the latter heavily streaked with brownish black; jugulum purplish maroon, conspicuously streaked medially with creamy white and dark brown; breast, abdomen, sides, crissum, and axillars rather deep slate gray, with a decided brownish tinge, the middle of abdomen and the crissum a little paler, the latter whitish, the longest feathers of under tail-coverts with large black subterminal patches; thighs brownish gray, more rufescent exteriorly; lining of wing deep gray, the feathers margined with ochraceous, buff, or whitish; the edge of wing broadly buffy white.

Measurements.—Male: ¹ Wing, 168–177 (average, 173.1) mm.; tail, 58.5–69.5 (63.4); exposed culmen, 56–64 (60.7); height of bill at base, 11–13 (11.9); tarsus, 46.5–53 (50.4); middle toe, 43–48 (45.1).

Female: ² Wing, 158–180.5 (172.2) mm.; tail, 60–71.5 (66.2); exposed culmen, 55–63.5 (59.1); height of bill at base, 11–12 (11.7); tarsus, 46–52 (49.9); middle toe, 40–46.3 (43.7).

Type-locality.—Rio Indio, near Gatun, Canal Zone, Panama.

Geographical distribution.—Southern Central America and northern South America: north to San Jose, central Costa Rica; Gatun, northern Panama; Bonda (Santa Marta), northern Colombia; Zulia and Lake Valencia, northern Venezuela; east to Trinidad Island; Cayenne, French Guiana; Rio Counani and Para, northeastern Brazil; south to the Capim River, northeastern Brazil; Merida, central Venezuela; Medellin (Antioquia), and Honda (Tolima), northwest central Colombia; west to Medellin, Colombia, and San Jose, Costa Rica.

The difference in size between this form and *Butorides virescens virescens* is sufficient to separate them; but it is doubtful that any color characters of importance exist, since the darkest birds in the series of *Butorides virescens hypernotius* are in this respect absolutely indistinguishable from specimens of *B. v. virescens*.

The female of *Butorides virescens hypernotius* averages about as large as the male. There are, however, two adult females from Panama, No. 206341, U.S.N.M., taken February 19, 1911, near Gatun, and No. 206347, U.S.N.M., taken April 9, 1911, near Tabernilla, that are very large (wing 180.5 and 180 mm., respectively); yet, since the date of the latter falls within the breeding season, they are

¹ Fourteen specimens, from Panama, Costa Rica, Colombia, and Venezuela.

² Six specimens, from Panama and Costa Rica.

both probably unusually large examples of *Butorides virescens hypernotius*; at least, it seems best to consider them such, rather than as migrant individuals of *Butorides virescens virescens*.

The specimens from Costa Rica, Colombia, and Venezuela examined are, in both size and color, apparently just like those from Panama. Average measurements of birds from these regions are as follows:

Localities.	Wing.	Tail.	Ex- posed culmen.	Height of bill at base.	Tarsus.	Middle toe.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
Five males, from Panama.....	173.7	62.5	59.4	11.4	50.1	44.9
Three males, from Colombia and Venezuela.....	173.0	64.8	61.7	11.9	50.2	45.2
Six males, from Costa Rica.....	172.7	63.4	61.4	12.3	50.8	45.3
Five females, from Panama.....	171.7	65.1	59.4	11.8	50.7	43.9
One female, from Costa Rica.....	175.0	71.5	57.3	11.0	46.0	43.0

This form is apparently resident throughout most, if not all, of its range, although, heron-like, it probably wanders more or less before and after the breeding season. It is possible, however, that in the southernmost part of its distribution it is migratory, for there are records of its occurrence in southern South America; yet these need confirmation.

I have seen 28 examples, from the localities below, breeding records having an asterisk:

Colombia.—Honda (Tolima); Mamatoca; Bonda (Santa Marta).

Costa Rica.—Vicinity of San Jose; Talamanca; Pozo del Rio Grande (Boruca); Bolson; Lipurio; Azahar de Cartago.

Panama.—Rio Indio, near Gatun (Canal Zone); Gatun; Frijoles; Rio Caño Quebrado (near Tabernilla); Sona.*

Venezuela.—Chama (near Merida); Rio Muenpen (near Merida).

Measurements of specimens of *Butorides virescens hypnotius*.

Museum and number.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed culmen.	Height of bill at base.	Tarsus.	Middle toe.
U.S.N.M., 206346 ¹	Male	Gatun, Canal Zone, Panama.	Feb. 26, 1911	E. A. Goldman.	mm mm	mm mm	mm mm	mm mm	mm mm	mm mm
U.S.N.M., 206342 ¹.....	..do.....	Río Indio, near Gatun, Canal Zone, ² Panama.	Feb. 16, 1911	.....do.....	176.0	61.0	56.0	11.5	52.5	45.5
U.S.N.M., 206345 ¹	Male .....	.....do.....	Feb. 8, 1911	.....do.....	170.0	60.5	61.0	11.0	49.5	47.0
E. A. and O. Bangs, 8902. ¹	Male	Sona, Panama.	July 12, 1901	W. W. Brown, jr.	176.5	63.0	60.5	11.2	46.5	43.5
Am. Mus. N. H., 107108 ¹	[Male]...	Near Gatun, Canal Zone, Panama.	Oct. 12, 1908	T. Hallinan.	174.0	65.0	61.0	11.5	50.5	45.0
U.S.N.M., 67921 ¹	Male	Talamanca, Costa Rica.	.....do.....	W. M. Gabb.	175.0	67.5	63.0	13.0	52.0	47.0
E. A. and O. Bangs, 19233. ¹	..do.....	San Jose, Costa Rica.	Dec. 10, 1906	C. F. Underwood.	174.0	64.0	57.5	12.0	51.0	48.0
E. A. and O. Bangs, 16378. ¹	..do.....	Vicinity of San Jose, Costa Rica.	Feb. 19, 1896	.....do.....	168.0	61.0	58.5	11.5	51.0	45.5
E. A. and O. Bangs, 20845. ¹	..do.....	Bolson, Costa Rica.	Dec. 23, 1907	.....do.....	171.5	62.0	62.8	12.3	48.0	43.0
E. A. and O. Bangs, 17975. ¹	..do.....	Pozo del Río Grande, Boruca, Costa Rica.	Apr. 4, 1906	.....do.....	177.0	67.0	62.5	12.8	53.0	43.5
E. A. and O. Bangs, 17976. ¹	..do.....	.....do.....	Apr. 11, 1906	.....do.....	171.0	59.0	64.0	12.2	50.0	45.0
Am. Mus. N. H., 94799 ¹	..do.....	Honda, Tolima, Colombia.	Jan. 27, 1907	Mrs. E. L. Kerr.	175.0	69.5	61.5	12.0	48.5	48.0
Am. Mus. N. H., 97887 ¹	..do. ³ ...	Mamatoca, Santa Marta, Colombia.	Oct. 20, 1899	Mrs. H. H. Smith.	169.0	58.5	61.5	12.0	50.0	44.0
J. Dwight, 24009 ¹.....	..do.....	Chama, near Merida, Venezuela.	Apr. 20, 1903	S. B. Galdón.	175.0	66.5	62.0	11.7	52.0	43.5
U.S.N.M., 206344 ¹	Female	Río Indio, near Gatun, Canal Zone, Panama.	Feb. 13, 1911	E. A. Goldman.	167.0	60.0	56.0	12.0	51.0	40.0
U.S.N.M., 206340 ¹.....	..do.....	.....do.....	.....do.....	.....do.....	173.0	68.0	61.0	12.0	51.8	46.0
U.S.N.M., 206341 ¹.....	..do.....	.....do.....	Feb. 19, 1911	.....do.....	180.5	68.0	61.5	12.0	50.0	44.0
U.S.N.M., 206343 ¹.....	..do. ³...	.....do.....	Feb. 23, 1911	.....do.....	158.0	64.0	55.0	12.0	48.5	46.3
U.S.N.M., 206347 ¹.....	..do.....	Río Caño Quebrado, near Tabernilla, Canal Zone, Panama.	Apr. 9, 1911	.....do.....	180.0	65.5	63.5	11.0	52.0	43.0
E. A. and O. Bangs, 20846. ¹	..do.....	Costa Rica	.....do.....	C. F. Underwood.	175.0	71.5	57.3	11.0	46.0	43.0
Am. Mus. N. H., 45732	.....do.....	Panama	.....do.....	J. McLeannan and J. R. Galbraith.	166.0	63.0	61.0	11.5	51.5	45.0

¹ Used in measurement averages on page 550.² Type.³ Not quite adult.

BUTORIDES VIRESCENS SATURATUS Ridgway.

Butorides saturatus RIDGWAY, Proc. U. S. Nat. Mus., vol. 10, August 6, 1888, p. 577 (Swan Island, Caribbean Sea).

Chars. subsp.—Resembling *Butorides virescens frazari*, but differs in the more reddish (less purplish) shade of foreneck, hind neck, sides of head, and particularly of jugulum and breast; also in the restriction of the whitish median stripe on the foreneck posterior to the upper throat.

Measurements.—Probable male:¹ Wing, 179 mm.; tail, 67; exposed culmen, 60.5; height of bill at base, 11.2; tarsus, 48.5; middle toe, 44.5.

Type-locality.—Swan Island, Caribbean Sea, Honduras.

Geographical distribution.—Swan Islands, Caribbean Sea, Honduras.

In both size and color this subspecies is nearest *Butorides virescens frazari*. It differs materially from *Butorides virescens virescens* in its darker plumage throughout, including upper surface and edgings of superior wing-coverts; and in restriction of median light stripe on jugulum and upper breast. It has longer wings and tail than *Butorides virescens hypernotius*, and in color is separable from the latter as from *Butorides virescens virescens*.

The type is the only specimen known, but this form is doubtless resident and endemic on the Swan Islands.

BUTORIDES VIRESCENS MARGARITOPHILUS, new subspecies.

Chars. subsp.—Similar to *Butorides virescens hypernotius*, but smaller throughout, particularly the wing, tail, and exposed culmen; posterior lower parts darker; neck and sides of head more rufescent (less purplish); median white stripe on throat, jugulum, and breast much reduced, often almost obliterated on breast and jugulum, giving thus a much less streaked appearance to the anterior lower parts; center of throat often tinged with ochraceous, instead of being pure white as in *Butorides virescens hypernotius*.

Description.—Type, adult male, No. 200442, U.S.N.M.; San Miguel Island, Pearl Islands, Bay of Panama, Panama, March 13, 1904; Wilmot W. Brown, jr. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy bottle green; narrow malar stripe tawny ochraceous; submalar stripe purplish maroon mixed with blackish; cheeks, auriculars, and neck all around purplish maroon, somewhat more rufescent anteriorly, somewhat glaucous posteriorly, the foreneck very narrowly and sparingly streaked medially with white, and also broadly though inconspicuously with dull, dark brown; upper surface of body deep bottle green, somewhat glossy, the long, pointed, plume-like feathers of back and scapulars glaucous and somewhat bluish; wings fuscous, the primaries and outer secondaries dull, dark, greenish-blue slate color; tertials, outer webs of inner secondaries, with the superior wing-coverts, dark, glossy bottle green; the first rows of lesser wing-coverts margined rather narrowly all around with tawny ochraceous, the remaining rows and the median coverts with buff, the greater coverts and outer webs of tertials and innermost secondaries with white; tail dark, glossy bottle green; chin and middle of upper throat narrowly light tawny ochraceous, the former very sparingly, the latter heavily, streaked with blackish; breast and entire posterior lower parts,

¹ One specimen (the type, No. 111281, U. S. N. M.), from Swan Island, Caribbean Sea, collected March 6, 1887, by Mr. Charles H. Townsend (original number, 1818).

axillars, and under wing-coverts, brownish slate color, the longest lower tail-coverts with paler edgings, the thighs exteriorly dark, rufescent brown; edge of wing broadly creamy white.

Measurements.—Male:¹ Wing, 160–174.5 (average, 166) mm.; tail, 56–66 (60.7); exposed culmen, 54–60 (57.0); height of bill at base, 10.5–12 (11.0); tarsus, 44–49 (47.3); middle toe, 40–45 (42.8).

Female:² Wing, 157–169 (161.9) mm.; tail, 53–64 (59.3); exposed culmen, 54–59 (56.2); height of bill at base, 10.7–12 (11.1); tarsus, 42.5–47 (45.3); middle toe, 40–43 (41.2).

Type-locality.—San Miguel Island, Pearl Islands, Bay of Panama, Panama.

Geographical distribution.—San Miguel Island, and probably also other of the Pearl Islands, Bay of Panama, Panama.

This Pearl Islands race differs in color from *Butorides virescens virescens* as from *Butorides virescens hypernotius*, and in size even more markedly. From *Butorides virescens saturatus* it may be distinguished by its smaller size, lighter colors throughout, including upper parts, tail, and edgings of superior wing-coverts; lighter, more rufescent (less purplish) neck and sides of head. It resembles *Butorides virescens frazari*, but is much smaller, with less deeply colored posterior lower parts; lighter, more rufescent (less purplish) neck and sides of head, and differs otherwise as from *Butorides virescens hypernotius*.

The two juvenal birds examined differ from the corresponding plumage of *Butorides virescens hypernotius* in their paler, duller, more grayish upper parts, and lighter streaks on lower surface.

Messrs. Thayer and Bangs have already commented at length³ on the considerable individual variation in the series of birds from the Pearl Islands. Notwithstanding this variation, these birds represent a very distinct subspecies, as comparison of the series available readily shows. The female averages somewhat smaller than the male, chiefly in length of wing.

In the above described⁴ extreme adult plumage, *Butorides virescens margaritophilus* curiously and closely resembles the adult of *Butorides brunescens*, from Cuba, but is somewhat less brownish on the posterior lower surface; has the edgings of superior wing-coverts much paler, on greater coverts even whitish, and thus much more conspicuous; and, most important of all, has always a broad and conspicuous white edge to the wing, and at least an indication of the light median gular and jugular stripe, which is entirely absent in *Butorides brunescens*; and the median part of throat as well as of chin trenchantly and con-

¹ Twelve specimens, from San Miguel Island, Pearl Islands, Panama.

² Nine specimens, from the same island.

³ Bull. Mus. Comp. Zool., vol. 46, No. 8, September, 1905, pp. 142–144.

⁴ See p. 553.

spicuously paler than the surrounding parts, sometimes even whitish; in *B. brunescens* only the chin is paler (tawny buff), the rest of the throat and neck being practically unicolor. Furthermore, the young of *Butorides virescens margaritophilus* is pale and streaked below like that of *Butorides virescens virescens*, instead of dark brown almost uniform, as in *Butorides brunescens*.

I have seen specimens of this new subspecies from only San Miguel Island, where it is doubtless resident throughout the year, as the dates on the labels range from February 21 to May 4. It probably occurs on the other Pearl Islands also. What form of *Butorides virescens* occurs on Cocos Island, southwest of Panama, whence came a single specimen taken January 26, 1902,¹ we have not been able to determine. That it will prove to be the same as either *Butorides virescens margaritophilus* or *Butorides virescens hypernotius* seems less likely than that it is an undescribed race.

Of this subspecies 22 specimens have been examined, all from San Miguel Island, Panama.

*Measurements of specimens of Butorides virescens margaritophilus.*²

Museum and number.	Sex.	Date.	Wing.	Tail.	Ex-posed cul-men.	Height of bill at base.	Tar-sus.	Middle toe.
			<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
U.S.N.M., 200443 ³	Male.....	Feb. 29, 1904	165.0	59.0	55.5	11.0	48.5	42.0
U.S.N.M., 200442 ³	do.....	Mar. 13, 1904	165.0	61.5	59.5	10.5	46.5	42.5
E. A. and O. Bangs, 14264 ³	do.....	Mar. 10, 1904	164.5	59.0	56.5	12.0	45.0	42.0
M. C. Z., 40357 ³	do.....	Mar. 11, 1904	160.0	56.0	60.0	11.0	49.0	43.0
E. A. and O. Bangs, 14260 ³	do.....	Mar. 12, 1904	164.0	60.0	58.0	11.0	49.0	44.0
E. A. and O. Bangs, 14263 ³	do.....	Mar. 14, 1904	169.5	61.0	57.8	11.0	48.0	43.5
E. A. and O. Bangs, 14262 ³	do.....	Mar. 15, 1904	170.0	62.0	58.0	10.5	48.5	43.5
E. A. and O. Bangs, 14265 ³	do.....	Mar. 17, 1904	174.5	66.0	56.5	11.0	49.0	45.0
M. C. Z., 40361 ³	do.....	do.....	164.0	62.5	58.0	10.8	44.0	40.5
M. C. Z., 40362 ³	do.....	Mar. 18, 1904	167.5	62.0	54.0	11.0	46.5	43.0
E. A. and O. Bangs, 14261 ³	do.....	Mar. 19, 1904	167.0	62.0	56.3	11.3	47.8	45.0
E. A. and O. Bangs, 4831 ³	do.....	May 4, 1900	160.0	57.5	54.0	11.2	45.8	40.0
E. A. and O. Bangs, 14268 ³	Female.....	Feb. 21, 1904	159.0	60.0	59.0	11.0	45.5	40.0
M. C. Z., 40355 ³	do.....	do.....	158.0	60.5	54.5	10.8	44.0	40.5
E. A. and O. Bangs, 14266 ³	do.....	Feb. 29, 1904	161.5	59.5	54.5	12.0	43.5	41.5
M. C. Z., 40356 ³	do.....	Mar. 3, 1904	157.0	53.0	54.0	10.8	45.5	40.0
E. A. and O. Bangs, 14269 ³	do. ⁴	Mar. 6, 1904	159.0	57.5	55.5	10.7	47.0	40.5
E. A. and O. Bangs, 14267 ³	do.....	Mar. 11, 1904	161.5	59.5	55.0	11.0	42.5	40.5
M. C. Z., 40358 ³	do.....	Mar. 12, 1904	163.0	59.5	56.5	11.0	46.0	41.5
M. C. Z., 40359 ³	do.....	Mar. 13, 1904	169.0	60.5	59.0	11.2	47.0	43.0
M. C. Z., 40360 ³	do.....	Mar. 15, 1904	166.5	64.0	58.0	11.0	47.0	43.0

BUTORIDES VIRESCENS BAHAMENSIS (Brewster).

Ardea bahamensis BREWSTER, Auk, vol. 5, January, 1888, p. 83 (Watling Island, Bahama Islands).

Chars. subsp.—Much like *Butorides virescens anthonyi*, but very much smaller throughout; posterior lower parts, neck, and sides of head even paler.

¹ Beck, Condor, vol. 9, 1907, p. 110.

² All of these specimens were collected by W. W. Brown, Jr., on San Miguel Island, Pearl Islands, Panama.

³ Used in measurement averages on p. 554.

⁴ Not quite adult.

Measurements.—Male:¹ Wing, 156–165 (average, 161.7) mm.; tail, 58–62.5 (60.3); exposed culmen, 51–64 (57.2); height of bill at base, 10.2–12.8 (11.3); tarsus, 42.5–51 (45.3); middle toe, 38–41 (39.5).

Female:² Wing, 156–164 (160.1); tail, 58–63 (59.9); exposed culmen, 53.5–61 (56.7); height of bill at base, 11–12.2 (11.6); tarsus, 46–48 (47.1); middle toe, 39–41 (40.0).

Type-locality.—Watling Island, Bahama Islands.

Geographical distribution.—Bahama Islands: Abaco, Acklin, Berry, Bimini, Cay Lobos, Eleuthera, Great Inagua, Green Cay, Little Abaco, Long, Mangrove Cay (near Andros Island), Mariguana, New Providence, Northern Andros, Samana, Southern Andros, Strangers Cay, Rum Cay, Watling, and doubtless other islands.

This pale race is very different from *Butorides virescens virescens*, being very much smaller, especially in length of wing, and much lighter in color throughout. It is more nearly like *Butorides virescens eremonomus*, of northern Mexico, but is much smaller throughout, and averages paler, particularly on neck and sides of head, with the neck more fulvescent. It is similar also to *Butorides virescens mesatus*, but is smaller in all measurements, with paler neck and sides of head. The juvenal plumage of *Butorides virescens bahamensis* is like that of *Butorides virescens anthonyi*.

The adult female is of about the same size as the male. The neck in some fresh plumaged birds is much darker and less fulvescent, and the posterior lower parts darker, thus approaching some light examples of *Butorides virescens cubanus*.³ There is great variation in the shade of the neck, probably due in part to age and to wear of the feathers, younger birds being usually somewhat paler.

So far as I can discover, all the birds from the various islands of the Bahama Archipelago are identical in both size and color, and this race probably occurs on most if not all of the islands in the group. It is confined to the Bahama Islands, being resident there throughout the year.

Nineteen specimens have been handled, from the subjoined localities, breeding records being marked with an asterisk:

Bahama Islands.—Watling Island;* Rum Cay;* Northern Andros Island;* Southern Andros Island;* Alfred Sound (Great Inagua Island); southern side of New Providence Island;* Abaco Island; Mangrove Cay (near Andros Island);* Strangers Cay.*

¹ Ten specimens, from the Bahama Islands.

² Four specimens, from the same group of islands.

³ See p. 557.

Measurements of specimens of *Butorides virescens bahamensis*.

Museum and number.	Sex.	Locality.	Date.	Collector.	Measurements.					
					Wing.	Tail.	Exposed culmen.	Height of bill at base.	Tarsus.	Middle toe.
U.S.N.M., 108819 ¹	Male ² ...	Watling Island. ³	Mar. 8, 1886	.....	m m	m m	m m	m m	m m	m m
U.S.N.M., 108001 ¹	do.....	do.....	do.....	W. Nye.....	159.0	58.0	56.0	11.8	47.5	38.5
U.S.N.M., 108002 ¹	do.....	do.....	Feb. 27, 1886	do.....	161.0	61.0	56.5	11.0	42.5	39.0
U.S.N.M., 189658 ¹	do.....	do.....	July 12, 1903	J. H. Riley.....	158.0	61.0	58.5	11.5	43.0	38.5
U.S.N.M., 108813 ¹	do.....	Rum Cay ³ ..	Mar. 1, 1886	C. H. Townsend.	163.0	62.5	64.0	10.2	51.0	41.0
U.S.N.M., 189659 ¹	do.....	New Providence Island. ³	June 24, 1903	J. H. Riley...	163.0	60.0	57.0	11.5	44.0	39.0
A. E. and O. Bangs, 3423 ¹	do.....	South side of New Providence Island. ³	May 7, 1897	C. J. Maynard	165.0	62.0	57.0	12.8	43.5	39.5
A. E. and O. Bangs, 14994 ¹	do.....	Mangrove Cay, near Andros Island. ³	Summer, 1904	.....	156.0	58.3	54.0	10.5	43.5	40.0
Am. Mus. N. H., 99428 ¹	do.....	Southern Andros Island. ³	June 2, 1904	F. M. Chapman.	162.5	61.0	51.0	10.5	46.0	38.0
M. C. Z., 56803 ¹	do.....	Alfred Sound, Great Inagua Island. ³	Feb. 5, 1909	W. W. Worthington.	164.0	58.5	57.5	12.0	47.0	40.5
Am. Mus. N. H., 99429 ⁴	do.....	Southern Andros Island. ³	June 14, 1904	F. M. Chapman.	149.0	54.5	51.5	11.0	38.0	36.5
U.S.N.M., 108820 ¹	Female.	Watling Island. ³	Mar. 1, 1886	.....	160.0	63.0	61.0	11.3	48.0	40.5
U.S.N.M., 108814 ¹	do.....	Rum Cay ³ ..	Mar. 2, 1886	L. F. Washburne.	160.5	60.0	53.5	11.0	46.0	39.5
U.S.N.M., 189660 ¹	do.....	do. ³	July 10, 1903	J. H. Riley...	156.0	58.0	55.0	12.0	47.0	39.0
Am. Mus. N. H., 99430 ¹	do.....	Northern Andros Island. ³	May 16, 1904	F. M. Chapman.	164.0	58.5	57.3	12.2	47.5	41.0
U.S.N.M., 108645.....	do.....	Abaco Island. ³	Apr. 3, 1886	C. H. Townsend.	159.0	59.0	54.0	10.0	45.0	40.0

¹ Used in measurement averages on p. 556.³ Bahama Islands.² Type.⁴ Almost adult, but apparently not full grown.

BUTORIDES VIRESCENS CUBANUS, new subspecies.

Chars. subsp..—Similar to *Butorides virescens virescens*, but smaller in all measurements; neck and sides of head usually lighter, more rufescent, less purplish; posterior lower surface averaging somewhat paler.

Description..—Type, adult male, No. 177847, U.S.N.M.; Palmarito, Cuba, February 16, 1902; William Palmer. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy bottle green; malar stripe light tawny ochraceous; submalar stripe purplish chestnut mixed with blackish; cheeks, auriculars, sides and back of neck, purplish chestnut, a little more rufescent anteriorly, somewhat glaucous posteriorly; upper surface of body deep bottle green, more or less glossy, the long, pointed, plume-like feathers of back and scapulars glaucous and inclining to bluish; wings fuscous, the primaries and outer secondaries dull, dark, greenish-blue slate color, a few of the inner primaries and outermost secondaries very narrowly tipped with white; tertials, outer webs of inner secondaries, and all the superior wing-coverts, dark, glossy bottle green; the outer

webs of outer scapulars, and the first rows of lesser wing-coverts margined all around with tawny ochraceous, the remaining rows and the median coverts with buff, the greater coverts and outer webs of tertials and innermost secondaries with white; tail dark, glossy bottle green; chin and middle of upper throat buffy white, medially streaked, the former sparingly, the latter heavily, with blackish brown; jugulum purplish chestnut, conspicuously streaked medially with white and dark brown; breast, abdomen, sides, crissum, and axillars slate gray with a slight brownish tinge, the longest feathers of under tail-coverts with darker centers and paler margins; thighs rufescent, and paler on the inner side; lining of wing deep gray, the feathers edged with ochraceous, the edge of wing broadly buffy white.

Measurements.—Male:¹ Wing, 160–171.5 (average, 164.9) mm.; tail, 58.5–64.5 (61.2); exposed culmen, 55–62 (58.9); height of bill at base, 10.5–12.5 (11.5); tarsus, 44–51 (48.2); middle toe, 39–45.5 (43.3).

Female:² Wing, 157–174 (167.8) mm.; tail, 55.5–67 (62.2); exposed culmen, 52.8–62 (58.8); height of bill at base, 10.8–12.5 (11.3); tarsus, 44–52 (47.3); middle toe, 38–44.5 (42.2).

Type-locality.—Palmarito, Province of Oriente (Santiago de Cuba) eastern Cuba.

Geographical distribution.—Greater Antilles and most of northern Lesser Antilles, West India Islands: Cuba, Isle of Pines, and Jamaica; east to Barbuda, Antigua, and Guadeloupe islands (with the exception of St. Christopher Island).

From *Butorides virescens hypernotius* this form is distinguished by its smaller size, lighter, more rufescent neck and sides of head, and rather paler posterior lower parts. It is larger than *Butorides virescens bahamensis*, with darker, less fulvescent (more purplish) neck and sides of head, and darker posterior under parts; the juvenal plumage is also darker, less grayish both above and below than the corresponding age of *Butorides v. bahamensis*. The juvenal plumage, to judge by the material examined, is similar to that of *Butorides virescens virescens*, but is lighter, less heavily streaked below, averaging also less rufescent; and is somewhat paler, more grayish above.

This is a very good race, readily distinguishable from *Butorides virescens virescens* by size and usually by color, although some specimens seem to be practically the same in this regard. Individual variation is considerable, involving chiefly the degree of rufescence and paleness of the neck and the lightness of the posterior under parts. The female is, at least in Cuba, somewhat larger than the male, but in Porto Rico the reverse seems to be the case.

¹ Eight specimens, from Cuba and the Isle of Pines.

² Ten specimens, from the same islands.

Specimens available from the Isle of Pines, and from the islands of Porto Rico, Vieques, Jamaica, Saba, St. John, Antigua, Barbuda, and Guadeloupe appear to be the same as those from Cuba, although birds from Porto Rico and Saba average slightly smaller than those from Cuba; but this may be accidental or due to the smallness of the series. What this difference is will appear by inspection of the following average measurements of birds from the various islands:

Localities.	Wing.	Tail.	Ex- posed culmen.	Height of bill at base.	Tarsus.	Middle toe.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
Eight males, from Cuba and the Isle of Pines.....	164.9	61.2	58.9	11.5	48.2	43.3
Five males, from Porto Rico.....	165.6	59.6	56.7	11.5	47.1	42.3
One male, from Jamaica.....	167.0	59.0	60.5	12.5	49.8	42.5
One male, from St. John Island.....	173.0	66.0	58.5	12.0	51.0	48.0
Two males, from Antigua Island.....	167.3	60.5	57.8	12.4	47.5	42.8
One male, from Saba Island.....	158.0	58.0	60.5	11.5	52.0	43.5
Ten females, from Cuba and the Isle of Pines.....	167.8	62.2	58.8	11.3	47.3	42.2
Five females, from Porto Rico.....	161.3	59.1	55.8	11.5	48.0	41.5
One female, from Jamaica.....	167.0	58.5	58.0	11.0	46.5	42.0
One female, from St. John Island.....	172.0	63.5	.....	12.0	49.5	43.0
Two females, from Barbuda Island.....	169.0	56.8	58.8	11.9	47.9	42.0

In addition to the above, the green heron has records from the West Indian islands of Tortola, Anegada, St. Thomas, Désirade, St. Croix, Virgin Gorda, St. Bartholomew, Montserrat, and Santo Domingo, on all of which, presumably, the present race occurs, though actual examination of specimens must finally determine. Throughout its range this subspecies appears to be resident during all the year.

Of the present form we have seen 59 examples, from the following localities in the West Indies, those with asterisks representing breeding records:

Antigua Island.—

Barbuda Island.—

Cuba.—Holguin,* El Guama; United States Naval Station, Guantanamo Bay; Remedios; Guama; Pinar del Rio; Palmarito; Cabañas.*
Trinidad.

Guadeloupe Island.—

Isle of Pines.—Santa Fe; Bibeyhagua,* Nueva Gerona.*

Jamaica.—Spanishtown; Westmoreland; Priestman's River.

Porto Rico.—Hucares; San Juan; Mayaguez; Arecibo; Caguas; Rio Piedras; Mameyes.

Saba Island.—

St. John Island.—

Vieques Island.—

Measurements of specimens of *Butorides virescens cubanus*.

Museum and number.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed cul-	Height of bill	Tarsus.	Middle toe.
					mm	mm	men.	at base.	mm	mm
U.S.N.M., 172492 ¹	Male....	Cabañas, Cuba.	May 30, 1900	W. Palmer and J. H. Riley.	161.0	58.5	60.5	12.2	51.0	44.5
U.S.N.M., 177847 ¹	do.....	Palmarito, Cuba. ²	Feb. 16, 1902	W. Palmer...	165.0	63.8	58.0	11.3	50.0	45.5
U.S.N.M., 171303 ¹	do.....	Pinar del Rio, Cuba.	Feb. 24, 1900	W. Palmer and J. H. Riley.	171.5	63.5	55.0	11.8	49.5	45.0
U.S.N.M., 177813 ¹	do. ³ ...	Guama, Cuba	Jan. 15, 1902	B. S. Bowdish	161.0	59.0	60.0	11.2	49.5	43.5
E. A. and O. Bangs, 14891 ¹	do.....	Cuba.	July 19, 1904	O. Tollin.....	163.0	59.0	58.3	10.5	45.0	42.5
E. A. and O. Bangs, 13486 ¹	do.....	Santa Fe, Isle of Pines.	Apr. 20, 1904	W. R. Zappey	171.0	61.0	62.0	10.5	51.0	44.0
E. A. and O. Bangs, 13487.....	do. ⁴ ...	Bibeyhagua, Isle of Pines.	May 15, 1904	do.....	150.0	47.5	55.0	11.0	43.0	41.0
U.S.N.M., 172717 ¹	do.....	Nueva Gerona, Isle of Pines.	July 8, 1900	W. Palmer and J. H. Riley.	160.0	60.0	56.0	12.2	44.0	39.0
U.S.N.M., 172718 ¹	do.....	do.....	July 7, 1900	do.....	166.5	64.5	61.0	12.5	45.5	42.0
U.S.N.M., 169017.....	do.....	Caguas, P. R.	Jan. 9, 1899	A. B. Baker...	165.0	58.0	58.0	11.5	46.0	42.5
U.S.N.M., 169018.....	do.....	Hucares, P. R.	Feb. 15, 1899	do.....	165.0	61.8	54.8	10.5	48.0	40.2
U.S.N.M., 232086.....	do.....	Caguas, Rio Caguaito, P. R.	Jan. 10, 1912	A. Wetmore...	160.0	55.0	57.0	11.5	44.3	42.0
U.S.N.M., 171582.....	do.....	Vieques Island, W. I.	Mar. 22, 1900	C. W. Richmond.	168.0	60.0	58.0	12.0	51.5	43.0
U.S.N.M., 232093.....	do.....	Mameyes, P. R.	Feb. 9, 1912	A. Wetmore...	170.0	63.0	55.5	12.0	45.5	44.0
U.S.N.M., 30344.....	do.....	Spanishtown, Jamaica.	Aug. —, 1863	W. T. March...	167.0	59.0	60.5	12.5	49.8	42.5
U.S.N.M., 81022.....	do.....	St. John Island, W. I.	.....	F. A. Ober...	173.0	66.0	58.5	12.0	51.0	48.0
U.S.N.M., 74515.....	do.....	Antigua Island, W. I.	Sept. 6, 1877	do.....	169.0	63.0	55.5	11.8	48.0	44.0
U.S.N.M., 191054.....	do.....	do.....	July 22, 1903	H. G. S. Branch	165.5	58.0	60.0	13.0	47.0	41.5
U.S.N.M., 80996.....	do.....	Saba Island, W. I.	.....	F. A. Ober...	158.0	58.0	60.5	11.5	52.0	43.5
Am. Mus. N. H., 57395 ¹	Female..	Trinidad, Cuba.	Mar. 4, 1892	F. M. Chapman.	174.0	67.0	60.0	12.0	47.5	43.5
Am. Mus. N. H., 96217 ¹	do.....	Holguin, Cuba.	Mar. 26, 1904	O. Tollin.....	172.0	61.0	61.0	11.0	49.0	44.0
Am. Mus. N. H., 96218 ¹	do.....	do.....	Mar. 10, 1904	do.....	166.0	61.5	57.5	11.0	48.0	44.0
M. C. Z., 46661 ¹	do.....	Remedios, Cuba.	Mar. 13, 1864	H. Bryant.....	171.0	63.0	59.0	11.5	47.5	42.0
E. A. and O. Bangs, 14892 ¹	do.....	Holguin, Cuba.	June 28, 1904	O. Tollin.....	164.0	61.0	57.8	11.0	47.0	41.5
U.S.N.M. 34245 ¹	do.....	Remedios, Cuba.	Dec. 1, 1863	N. H. Bishop...	157.0	55.5	52.8	10.8	44.0	41.0
U.S.N.M. 39127 ¹	do.....	do.....	Dec. 12, 1863	do.....	166.0	63.5	62.0	11.5	46.5	38.0
U.S.N.M. 172493 ¹	do.....	Cabañas, Cuba.	May 30, 1900	W. Palmer and J. H. Riley.	170.0	64.0	56.5	11.0	45.0	40.0
U.S.N.M., 172716 ¹	do.....	Nueva Gerona, Isle of Pines.	July 8, 1900	do.....	170.0	60.0	60.0	12.5	52.0	43.8
U.S.N.M., 172715 ¹	do.....	do.....	June 29, 1900	do.....	168.0	65.0	61.0	11.0	47.5	44.5
U.S.N.M., 168940.....	do.....	Mayaguez, P. R.	Jan. 23, 1899	J. D. Milligan.	160.5	54.0	56.5	12.2	50.5	42.0
U.S.N.M., 171583.....	do.....	Arecibo, P. R.	Apr. 2, 1900	L. Stejneger...	149.0	60.0	57.0	11.5	47.0	39.5
U.S.N.M., 232099.....	do.....	Rio Piedras, P. R.	Dec. 22, 1911	A. Wetmore...	168.5	63.5	55.5	12.3	45.0	40.5
U.S.N.M., 232090.....	do.....	Mameyes, P. R.	Feb. 16, 1912	do.....	159.5	56.0	53.0	10.5	46.5	42.0
U.S.N.M., 232092.....	do. ³ ...	do.....	do.....	do.....	169.0	62.0	57.0	11.0	51.0	43.5
M. C. Z., 37759.....	do.....	Priestman's River, Jamaica.	Jan. 21, 1891	W. E. D. Scott	167.0	58.5	58.0	11.0	46.5	42.0
U.S.N.M., 81023.....	do.....	St. John Island, W. I.	.....	F. A. Ober...	172.0	63.5	.....	12.0	49.5	43.0
U.S.N.M., 191052.....	do.....	Barbuda Island, W. I.	Aug. 17, 1903	H. G. S. Branch.	.....	55.0	57.5	11.2	47.8	41.0
U.S.N.M., 191053.....	do.....	do.....	Sept. 9, 1903	do.....	169.0	58.5	60.0	12.5	48.0	43.0

¹ Used in measurement averages on p. 558.² Type.³ Not quite adult.⁴ Evidently not full grown, though in nearly adult plumage.

Measurements of specimens of *Butorides virescens cubanus*—Continued.

Museum and number.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed culmen.	Height of bill at base.	Tarsus.	Middle toe.
U.S.N.M., 73068.....		Porto Rico.....		H. Bryant.....	mm	mm	mm	mm	mm	mm
U.S.N.M., 169019.....		Fajardo, P.R.....	Feb. 17, 1899	A. B. Baker.....	170.0	61.0	56.0	10.5	47.0	41.0
U.S.N.M., 168941.....		San Juan, P. R.....	Jan. 6, 1899	J. D. Milligan.....	167.0	59.5	56.0	11.5	50.0	45.0
A. N. S. Phila., 26550.....		Porto Rico.....			160.0	63.5	54.0	11.5	46.5	40.5
A. N. S. Phila., 26540.....		.....do.....	— — 1869	G. Latimer.....	172.0	62.0	50.5	10.5	49.0	41.5
U.S.N.M., 60329.....		.....do.....		.....do.....	155.0	62.5	53.0	11.0	44.5	39.5
U.S.N.M., 60331.....		.....do.....		.....do.....	167.0	59.0	53.8	12.0	47.0	43.0
U.S.N.M., 76380.....		Guadeloupe Island, W. I.....		F. A. Ober.....	169.0	64.5	59.0	12.0	47.5	41.2

BUTORIDES VIRESCENS CHRISTOPHORENSIS, new subspecies.

Chars. subsp.—In general appearance like *Butorides virescens bahamensis*, but bigger; and the neck and sides of head more brightly fulvescent.

Description.—Type, adult male, No. 80921, U.S.N.M.; St. Christopher Island, West Indies; F. A. Ober; original number, 221. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy, more or less bluish, bottle green; malar stripe buffy white; submalar stripe, cheeks, auriculars, sides and back of neck, cinnamon rufous, slightly purplish on hind neck; upper surface of body deep, somewhat bluish, bottle green, the long plume-like feathers of back and scapulars glaucous and more bluish; wings fus-cous, the primaries and outer secondaries dull, dark, greenish-blue slate color, the innermost primaries and outermost secondaries nar-rowly tipped with white; tertials, outer webs of inner secondaries, with all the superior wing-coverts, dark, glossy bottle green; the outer scapulars on exterior webs, and the first rows of lesser wing-coverts margined all around rather narrowly with tawny or tawny ochraceous, the other rows and the median coverts with buff, the greater coverts and outer webs of tertials and innermost secondaries with white; tail mostly dark, glossy bottle green; chin and middle of upper throat white, the latter streaked medially with dull chestnut; jugulum cinnamon rufous, streaked medially with paler and with cream white; breast, abdomen, sides, flanks, crissum, and axillars, rather light smoke gray, the longest feathers of lower tail-coverts with brownish slate centers; thighs smoke gray, washed with ochra-ceous; lining of wing smoke gray, slightly washed with ochraceous, the edge of wing broadly cream white.

Measurements.—Male:¹ Wing, 171–175 (average, 173) mm.; tail, 60–66.5 (63.3); exposed culmen, 62.5–63 (62.8); height of bill at base, 11.5–12 (11.8); tarsus, 51–54 (52.5); middle toe, 42.5–47 (44.8).

¹ Two specimens, from St. Christopher Island, West Indies.

Female:¹ Wing, 164–167 (165.5) mm.; tail, 58.5–60 (59.3); exposed culmen, 57–61 (59.0); height of bill at base, 11–11.5 (11.3); tarsus, 46–52 (49.0); middle toe, 39.5–40.5 (40.0).

Type-locality.—St. Christopher Island, West Indies.

Geographical distribution.—St. Christopher Island, West Indies.

This St. Christopher Island race may be readily distinguished from *Butorides virescens cubanus* by the greater size of the male; paler posterior lower parts; lighter, much more fulvescent (less purplish) neck and sides of head. It is very different from *Butorides virescens cubanus*, notwithstanding that its range is nearly surrounded by that of the latter. It is, in fact, much more nearly like the bird from the Bahama Islands—*Butorides virescens bahamensis*. So far as known, it is confined to the island of St. Christopher, where it is found apparently throughout the year.

Judging from the birds examined, the female is decidedly smaller than the male.

Four specimens of this race have been available, all from St. Christopher Island.

Measurements of specimens of Butorides virescens christophorensis.

Museum and number.	Sex.	Date.	Wing.	Tail.	Ex-posed culmen.	Height of bill at base.	Tarsus.	Middle toe.
			mm.	mm.	mm.	mm.	mm.	mm.
U.S.N.M., 80921 ²	Male ³		175.0	66.5	63.0	12.0	51.0	42.5
M.C.Z., 28404 ²	[Male] ⁴		171.0	60.0	62.5	11.5	54.0	47.0
U.S.N.M., 80922 ²	Female ⁵		167.0	58.5	57.0	11.0	52.0	40.5
Field Mus. N. H., 33671 ²	do. ⁶	Mar. 8, 1890	164.0	60.0	61.0	11.5	46.0	39.5

BUTORIDES VIRESCENS DOMINICANUS, new subspecies.

Chars. subsp.—Similar to *Butorides virescens cubanus*, but wing and tail longer; posterior under surface paler; neck and sides of head averaging somewhat paler and rather less rufescent (more purplish).

Description.—Type, adult male, No. 13629, collection of E. A. and O. Bangs; Roseau, Dominica Island, West Indies, June 30, 1905; A. H. Verrill. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy, somewhat bluish bottle green; malar stripe cream white; submalar stripe light purplish chestnut, mixed with brownish black; cheeks, auriculars, sides and back of neck, rather light and rather purplish chestnut, more purplish and slightly glaucous posteriorly; upper surface of body dark, bluish bottle green, somewhat glossy, the long, pointed, plume-like feathers of back and scapulars glaucous; wings fuscous, the primaries and outer secondaries dull, dark, greenish-blue slate color, the innermost

¹ Two specimens, from the same island.

² Used in measurement averages on pp. 561–562.

³ Type, from St. Christopher Island, West Indies, collected by F. A. Ober.

⁴ From the same locality, collected by W. J. Branah.

⁵ From the same locality, collected by F. A. Ober.

⁶ From the same locality, collected by C. S. Winch.

primaries and outermost secondaries narrowly tipped with white; tertials, outer webs of inner secondaries, with greater, median, and lesser wing-coverts, dark, glossy bottle green; the outer scapulars on exterior webs and the first rows of lesser wing-coverts margined all around rather narrowly with tawny or tawny ochraceous, the other rows and the median coverts with buff, the greater coverts and outer webs of tertials and innermost secondaries with white; tail dull, dark, grayish blue-green; chin and middle of upper throat creamy white, the latter streaked medially with dull, dark brown; jugulum light purplish chestnut, medially vinaceous cinnamon, conspicuously streaked with white and obscurely with dull brown; breast, axillars and posterior lower parts light drab gray, somewhat darker on the breast, the longest lower tail-coverts with dark gray centers and whitish edges; thighs dull tawny; lining of wing light gray, with edgings of buff, the edge of wing broadly buffy white.

Measurements.—Male:¹ Wing, 168.5–175.5 (average, 171.3) mm.; tail, 62–69 (65.7); exposed culmen, 57–58.5 (57.8); height of bill at base, 11–12.5 (11.6); tarsus, 47.5–52 (49.5); middle toe, 42.5–46 (43.8).

Female:² Wing, 169 mm.; tail, 65; exposed culmen, 56.5; height of bill at base, 12.5; tarsus, 48.5; middle toe, 43.

Type-locality.—Roseau, Dominica Island, West Indies.

Geographical distribution.—Island of Dominica, West Indies.

This new subspecies is very much like *Butorides virescens mesatus*, from Nicaragua, but the wing and tail are somewhat longer; the bill shorter; the posterior lower parts average darker, less whitish; the neck and sides of the head a little darker, more purplish. From *Butorides virescens christophorensis* it is separable by its much less rufescent, rather darker neck and sides of head, and shorter bill; it is larger than *Butorides virescens bahamensis*, and has the neck and sides of head less fulvescent, more inclining to purplish. The juvenal plumage of *Butorides virescens dominicanus* averages darker, more heavily streaked below than that of *Butorides virescens cubanus*, at least as shown by the specimens now at hand.

The single adult female (No. 77856, U.S.N.M.) is the darkest of the adults, particularly on the posterior lower parts, and probably represents about the maximum of variation in this direction. It is not as dark as average specimens of *Butorides virescens lucianus*, from St. Lucia.³ One of the adult males (No. 14621, collection of J. Dwight, jr.), is very light below, almost whitish.

This race is apparently peculiar to the island of Dominica, where it is resident throughout the year.

Seven specimens have been at hand, those with other indication than merely "Dominica" being from the subjoined localities:

Dominica Island.—Roseau; Soufriere.

¹ Three specimens, from the island of Dominica, West Indies.

² One specimen, from the same island.

³ See p. 565.

Measurements of specimens of *Butorides virescens dominicanus*.

Museum and number.	Sex.	Date.	Wing.	Tail.	Ex- posed culmen.	Height of bill at base.	Tarsus.	Middle toe.
E. A. and O. Bangs, 13629. ¹	Male ² ...	June 30, 1905	mm. 170.0	mm. 69.0	mm. 58.0	mm. 11.0	mm. 49.0	mm. 43.0
J. Dwight, 14621 ¹	.....do. ³	July 14, 1901	168.5	62.0	58.5	11.3	47.5	42.5
U.S.N.M., 85204 ¹	.....do. ⁴	May 4, 1880	175.5	66.0	57.0	12.5	52.0	46.0
U.S.N.M., 77856 ¹	.....Female ⁵	.....	169.0	65.0	56.5	12.5	48.5	43.0

BUTORIDES VIRESCENS MACULATUS (Boddaert).

Cancroma maculata BODDAERT, Tabl. Planch. Enlum., 1783, p. 54 (based on "Crabier tacheté de la Martinique," DAUBENTON, Planch. Enlum. No. 912; "Crabier verd tacheté," BUFFON, Hist. Nat. des Oiseaux [ed. Deux Ponts], vol. 14, p. 143; orig. ed., vol. 7, 1780, p. 405) (Martinique).

Chars. subsp.—Near *Butorides virescens dominicanus*, but wing and tail longer; and posterior lower parts darker.

Measurements.—Probable male:⁶ Wing, 179–181 (average, 180) mm.; tail, 64.2–70 (67.1); exposed culmen, 56.5–61 (58.8); height of bill at base, 12.5–13 (12.8); tarsus, 49.2–52.8 (51.0); middle toe, 43.5–46.8 (45.2).

Type-locality.—Martinique Island, West Indies.

Geographical distribution.—Island of Martinique, West Indies.

The Martinique green heron differs from *Butorides virescens cubanus* in much larger size (except length of bill), and paler, more purplish neck and sides of head. It is similar to *Butorides virescens christophorensis*, but has the wing and tail longer, bill stouter, neck much more purplish (less fulvescent), and the posterior lower parts darker. From *Butorides virescens bahamensis* it is still more different by reason of its much greater size (except length of culmen); actually as well as relatively stouter bill; darker, more purplish, less fulvescent neck and sides of head; and darker posterior lower surface. It is separable from *Butorides virescens hypernotius*, of Panama, by its longer wing and tail, much paler neck, and apparently also by somewhat lighter posterior lower parts.

One nearly adult bird (No. 33710, Field Mus.) is marked "male," but it evidently is incorrectly sexed or is not full grown, for it is altogether too much smaller than the other adults at hand, which we assume to be males.

The *Cancroma maculata* of Boddaert⁷ is the "Crabier tacheté de la Martinique" of Daubenton,⁸ and also the "Crabier verd tacheté"

¹ Used in measurement averages on p. 563.

² Type, collected by A. H. Verrill, at Roseau, Dominica Island, West Indies.

³ Collected by H. S. Branch, on Dominica Island.

⁴ Collected by H. A. A. Nichols, on Dominica Island.

⁵ Collected by F. A. Ober, on Dominica Island.

⁶ Two specimens, from Martinique Island, West Indies.

⁷ Tabl. Planch. Enlum., 1783, p. 54.

⁸ Planch. Enlum., No. 912.

of Buffon,¹ and as such pertains exclusively to the green heron from Martinique, the name for which thus becomes *Butorides virescens maculatus* (Boddaert). The subspecies seems to be confined to this island.

Three specimens examined.

Measurements of specimens of Butorides virescens maculatus.

Museum and number.	Sex.	Date.	Wing.	Tail.	Ex- posed culmen.	Height of bill at base.	Tarsus.	Middle toe.
			mm.	mm.	mm.	mm.	mm.	mm.
M. C. Z., 28693 ²	[Male] ³		181.0	70.0	61.0	12.5	49.2	43.5
M. C. Z., 28694 ²	do. ³		179.0	64.2	56.5	13.0	52.8	46.8
Field Mus. N. H., 33710.....	do. ⁴	Nov. 12, 1886	163.5	59.0	59.5	12.0	47.5	39.5

BUTORIDES VIRESCENS LUCIANUS, new subspecies.

Chars. subsp.—Much like *Butorides virescens maculatus*, and in color scarcely distinguishable, but smaller throughout, especially in length of the wing and tail.

Description.—Type, adult male, No. 115883, U.S.N.M.; Port Castries, St. Lucia Island, West Indies, December 1, 1888; H. E. Parmenter. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy bottle green; malar stripe cream white; submalar stripe light purplish chestnut mixed with blackish; cheeks, auriculars, sides and back of neck rather light purplish chestnut, somewhat more rufescent anteriorly, slightly glaucous posteriorly; upper surface of body deep bottle green, somewhat glossy, the long, pointed, plume-like feathers of back and scapulars partly more oily green, partly more bluish and a little glaucous; wings fuscous, the primaries and outer secondaries dull, dark, greenish-blue slate color, the innermost primaries and outermost secondaries narrowly tipped with white; tertials, outer webs of inner secondaries, and all the superior wing-coverts, dark, glossy bottle green; the outer scapulars on exterior webs and the first rows of lesser wing-coverts margined all around with deep tawny, the other rows and the median coverts with tawny ochraceous, the greater coverts and outer webs of tertials and innermost secondaries with ochraceous buff; tail mostly deep, glossy bottle green; chin and middle of upper throat cream white, the latter streaked medially with Prout's brown; jugulum rather light purplish chestnut, streaked medially with cream white; breast, abdomen, sides, crissum, and axillars slate gray, with a slight brownish tinge, and, on abdomen and crissum, somewhat paler, the longest feathers of lower tail-coverts with darker centers and paler margins; thighs dull tawny ochraceous; lining of wing deep gray, some of the

¹ Hist. Nat. des Oiseaux [ed. Deux Ponts], vol. 14, p. 143; orig. ed., vol. 7, 1780, p. 405.

² Used in measurement averages on page 564.

³ From Martinique Island, collector unknown.

⁴ Nearly adult, but apparently not full grown. From Martinique Island, collected by W. E. Richardson.

feathers margined with buff or ochraceous, the edge of wing broadly buffy white.

Measurements.—Probable male: ¹ Wing, 165–176 (average, 171.2) mm.; tail, 63–66 (64.6); exposed culmen, 54.5–60 (57.1); height of bill at base, 11.8–12.8 (12.1); tarsus, 47–51 (48.4); middle toe, 39–44 (41.8).

Type-locality.—Port Castries, St. Lucia Island, West Indies.

Geographical distribution.—Island of St. Lucia, West Indies.

This race is distinguishable from *Butorides virescens dominicanus* chiefly by its decidedly darker posterior under parts. It differs from *Butorides virescens cubanus* in longer wing and tail, stouter bill, and lighter, more purplish neck and sides of head. From *Butorides virescens christophorensis* it may readily be separated by its much more purplish, less fulvescent neck and sides of head; darker posterior lower parts; shorter, relatively stouter bill; somewhat shorter tarsus; and smaller feet. It is still more different from *Butorides virescens bahamensis*, with longer wing and tail, darker posterior under surface, and more deeply colored, more purplish, much less fulvescent neck and sides of head. Birds of this form in juvenal plumage are apparently about the same as those of *Butorides virescens dominicanus*; but are, on the average, darker, more rufescent, more heavily streaked below than the young of *Butorides virescens cubanus*. The color characters of adults are very uniform in the series examined. All but one of the specimens is without indication of sex on the label, but they are probably all, well-nigh certainly all but one or two, males, and we have, therefore, considered them such in making comparisons.

This subspecies is a well marked one, and apparently confined to the island of St. Lucia.

We have seen 11 specimens, one of these from Port Castries, the rest labeled simply "St. Lucia."

Measurements of specimens of Butorides virescens lucianus.

Museum and number.	Sex.	Date.	Wing.	Tail.	Ex-posed culmen.	Height of bill at base.	Tarsus.	Middle toe.
U.S.N.M., 115883 ²	Male ³	Dec. 1, 1888	<i>mm.</i> 174.0	<i>mm.</i> 66.0	<i>mm.</i> 58.0	<i>mm.</i> 12.0	<i>mm.</i> 49.5	<i>mm.</i> 44.0
M.C.Z., 27406 ²	[Male] ⁴ .....	.....	176.0	64.0	57.0	12.0	47.0	42.5
M.C.Z., 26746 ²	do. ⁴ .....	.....	172.0	66.0	60.0	12.8	51.0	42.0
M.C.Z., 27402 ²	do. ⁴ .....	.....	170.0	64.0	60.0	12.3	47.0	39.0
M.C.Z., 27404 ²	do. ⁴ .....	.....	167.0	64.0	54.5	11.8	48.5	42.0
M.C.Z., 27403 ²	do. ⁴ .....	.....	165.0	63.0	57.0	12.0	47.0	40.5
M.C.Z., 27405 ²	do. ⁴ .....	.....	174.0	64.0	56.0	12.0	50.0	42.3
M.C.Z., 27407 ²	do. ⁴ .....	.....	171.5	66.0	54.5	12.2	47.0	41.8

¹ Eight specimens, from the island of St. Lucia, West Indies.

² Used in measurement averages on p. 566.

³ Type, collected by H. E. Parmenter, at Port Castries, St. Lucia Island.

⁴ Collected by J. Semper, on St. Lucia Island.

BUTORIDES VIRESCENS BARBADENSIS, new subspecies.

Chars. subsp.—Resembling *Butorides virescens lucianus*, but wing and tail shorter; neck and sides of head more fulvescent and averaging paler; posterior lower parts much lighter.

Description.—Type, adult male, No. 12629, collection of E. A. and O. Bangs; Joe's River, Barbados Island, West Indies, September 11, 1903; Austin H. Clark. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy bottle green; malar stripe buffy white; submalar stripe tawny chestnut, mixed with some blackish; cheeks, auriculars, sides and back of neck, tawny chestnut, slightly purplish posteriorly; upper surface of body deep bottle green, somewhat glossy, the long, pointed, plume-like feathers of back and scapulars somewhat oily green or glaucous bluish; wings fuscous, the primaries and outer secondaries dull, dark, greenish-blue slate color; the inner primaries and outer secondaries broadly tipped with white; tertials, outer webs of inner secondaries, with all the superior wing-coverts, dark, glossy bottle green; the outer scapulars on exterior webs and the first rows of lesser wing-coverts margined all around with tawny, the remaining wing-coverts and outer webs of tertials and innermost secondaries with ochraceous, ochraceous buff, or buff (some of the greater coverts with white); the primary coverts and some of the greater coverts with triangular terminal spots of white, apparently a relic of immaturity; most of tail glossy, dark bottle green, the middle feather greenish fuscous; chin and middle of upper throat white, the latter streaked with clove brown; jugulum rather purplish tawny chestnut, medially with conspicuous streaks of white and less marked ones of dull brown; breast, sides, abdomen, crissum, and axillars, smoke gray, rather darker on breast, lighter on middle of abdomen, the longest lower tail-coverts with fuscous terminal or subterminal patches; thighs ochraceous, mixed with dull slaty brownish; lining of wing pale gray, mixed with white and buff, the edge of wing very broadly cream white.

Measurements.—Male:¹ Wing, 163–166 (average, 164.9) mm.; tail, 58–63.5 (59.8); exposed culmen, 55–59.5 (57.1); height of bill at base, 11–12.8 (11.7); tarsus, 46–48.5 (47.1); middle toe, 40.5–42.5 (41.6).

Female:² Wing, 162–172 (166.7) mm.; tail, 60–61.5 (60.8); exposed culmen, 55.5–57 (56.3); height of bill at base, 12–13 (12.5); tarsus, 46.5–50.5 (48.3); middle toe, 41–45 (42.7).

Type-locality.—Joe's River, island of Barbados, West Indies.

Geographical distribution.—Barbados Island, West Indies.

This new subspecies resembles most closely in color *Butorides virescens bahamensis*, notwithstanding the wide geographic separa-

¹ Four specimens, from Barbados Island, West Indies.

² Three specimens, from the same island.

tion; but it is distinguishable from that bird by its darker, less fulvescent neck; usually slightly darker posterior lower parts; somewhat larger average size (excepting length of culmen); and relatively stouter bill. It differs from *Butorides virescens christophorensis*, to which also it bears close resemblance, in smaller size of the male (excepting depth of bill), and the less brightly fulvescent (more purplish) neck and sides of the head. From *Butorides virescens dominicanus* its smaller size (except of culmen), and its more fulvescent (less purplish) neck and sides of head are sufficiently diagnostic marks. Compared with *Butorides virescens maculatus*, it is much smaller throughout; the neck and sides of head are more fulvescent, less purplish, and the posterior lower parts lighter. From *Butorides virescens cubanus* the much paler posterior under surface, and the much lighter, more fulvescent neck and sides of head distinguish it at a glance. The juvenal plumage of *Butorides virescens barbadensis* apparently averages darker, more rufescent below anteriorly than the young of *Butorides virescens bahamensis*.

The female of this race appears to be somewhat larger than the male, at least on the average. Individual variation in depth of colors is considerable, as in *Butorides virescens bahamensis*. The subspecies seems to be confined to the island of Barbados, where it is found throughout the year.

Of *Butorides virescens barbadensis* there have been 10 examples seen, from the following localities, breeding records marked with an asterisk:

Barbados Island.—Joe's River; Beachmont; Bathsheba;* St. Andrews.

Measurements of specimens of *Butorides virescens barbadensis*.

Museum and number.	Sex.	Locality.	Date.	Collector.	Wing.		Exposed culmen.	Height of bill at base.	Tarsus.	Middle toe.
					mm	mm				
E. A. and O. Bangs, 12629. ¹	Male....	Joe's River, Barbados I. ²	Sept. 11, 1903	A. H. Clark..	163.0	59.0	55.0	12.0	46.0	40.5
E. A. and O. Bangs, 12628. ¹	Male, juvenal.	Beachmont, Barbados I.	Sept. 9, 1903	...do.....	165.5	58.0	57.0	11.0	47.0	42.5
E. A. and O. Bangs, 12633. ¹	...do....	Bathsheba, Barbados I.	Aug. 6, 1903	...do.....	166.0	58.5	57.0	12.8	48.5	41.0
Field Mus. N. H., 33651. ¹	Male....	Barbados Island.	Feb. 3, 1886	W. E. Richardson.	165.0	63.5	59.5	11.0	47.0	42.5
E. A. and O. Bangs, 12626. ¹	Female	Joe's River, Barbados I.	Sept. 10, 1903	A. H. Clark..	166.0	61.5	57.0	12.5	47.8	42.0
E. A. and O. Bangs, 12627. ¹	...do. ³...	...do.....	Aug. 29, 1903	...do.....	162.0	...	55.5	13.0	46.5	41.0
E. A. and O. Bangs, 12630. ¹	Female, juvenal.	St. Andrews, Barbados I.	Sept. 9, 1903	...do.....	172.0	60.0	56.5	12.0	50.5	45.0

¹ Used in measurement averages on p. 567.

² Type.

³ Not quite adult.

BUTORIDES VIRESCENS GRENADENSIS, new subspecies.

Chars. subsp..—Similar to *Butorides virescens lucianus*, but neck and sides of head darker, rather more rufescent (less purplish).

Description.—Type, adult male, No. 74147, U.S.N.M.; Grenada Island, West Indies, March —, 1878; F. A. Ober; original number 505. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy bottle green; malar stripe cream buff; submalar stripe mixed blackish and chestnut; cheeks, auriculars, sides and back of neck, purplish chestnut, a little more rufescent anteriorly, slightly glaucous posteriorly; upper surface of body deep bottle green, more or less glossy, the long, pointed, plume-like feathers of back and scapulars in part somewhat glaucous; wings fuscous, the primaries and outer secondaries dull, dark, greenish-blue slate color, the inner primaries and outer secondaries tipped with white; tertials, outer webs of inner secondaries, and all the superior coverts deep bottle green, but in most places worn until grayish or bluish; the outer webs of outer scapulars and the first rows of lesser wing-coverts margined all around with tawny ochraceous, the remaining rows and the median coverts with buff, the greater series and outer webs of tertials and innermost secondaries with cream white; tail mostly dark bottle green, somewhat glossy; chin and middle of upper throat creamy white, medially streaked with clove brown; jugulum purplish chestnut, streaked medially much with white and a little with dark, earthy brown; breast, abdomen, sides, crissum, and axillars, slate gray with a brownish tinge, the longest feathers of under tail-coverts whitish, with large, dark brownish gray distal patches; thighs dull ochraceous mixed with dark brownish gray; lining of wing slate gray, rather brownish, mottled with cream buff and ochraceous, the edge of wing broadly cream buff.

Measurements.—Male:¹ Wing, 169–170.5 (average, 169.8) mm.; tail, 59–66 (61.6); exposed culmen, 56–63 (59.9); height of bill at base, 12–12.5 (12.3); tarsus, 48.5–51.5 (50.3); middle toe, 43.8–46 (44.7).

Female:² Wing, 159 mm.; tail, 58.5; exposed culmen, 58.5; height of bill at base, 11.5; tarsus, 49; middle toe, 40.

Type-locality.—Grenada Island, West Indies.

Geographical distribution.—Southern Lesser Antilles, West Indies: south to Grenada Island; north to Carriacou, Bequia, and St. Vincent Islands.

The present form is apparently almost identical in color with *Butorides virescens cubanus*, although the posterior lower parts average slightly darker; but in size the male, at least, averages larger. It is thus very close to the Cuban form, but in view of the wide separation of range and the direct interposition of three other races, it seems best to consider the Grenada bird as a different form, since it is doubtless an offshoot of one of the neighboring races, rather than of the far-distant *Butorides virescens cubanus*, its resemblance to that subspecies being fortuitous or due to climatic or environmental conditions.

¹ Four specimens, from the islands of Grenada and Bequia, West Indies.

² One specimen, from St. Vincent Island, West Indies.

From *Butorides virescens maculatus* it may be distinguished by decidedly shorter wing and tail, darker, somewhat more rufescent neck and sides of head. Compared with *Butorides virescens dominicanus*, it has decidedly darker posterior lower parts, usually darker and rather more rufescent (less purplish) neck and sides of head, and in the male, at least, somewhat shorter tail. It is slightly smaller, in the male, than *Butorides virescens christophorensis*, but has a stouter bill; the neck and sides of head are much darker, very much less fulvescent (much more purplish); and the hind parts below are darker. It may easily be separated from *Butorides virescens barbadosensis* by larger size throughout, at least in the male; darker, less fulvescent neck and sides of head, and darker gray posterior lower parts. It may be distinguished readily from *Butorides virescens bahamensis* by its larger size throughout (at least in the male), much darker, less fulvescent (more purplish) neck and sides of head, and darker posterior under surface. The juvenal plumage is apparently indistinguishable from that of *Butorides virescens cubanus*.

Specimens from the islands of Bequia and Carriacou are seemingly identical with the Grenada bird, in both size and color. A single female from St. Vincent, while of the same coloration, is very much smaller than the males from Grenada and Bequia, but apparently belongs with them. This subspecies thus ranges over the islands from Grenada north to St. Vincent, and is resident here throughout the year. In addition to the above localities of specimens, there is record of its occurrence on Mustique Island, and it probably lives in all suitable places throughout the Grenadines.

Seven specimens have been examined, from the following West Indian localities, the breeding records being noted by an asterisk:

Bequia Island.—Spring Estate.

Carriacou Island.—Harvey Vale.

Grenada Island.—St. George.*

St. Vincent Island.—Rutland Vale.

Measurements of specimens of Butorides virescens grenadensis.

Museum and number.	Sex.	Date.	Wing.	Tail.	Ex- posed culmen.	Height of bill at base.	Tarsus.	Middle toe.
E. A. and O. Bangs, 13212 ¹ ..	Male ² ...	May 24, 1904	mm. 170.5	mm. 61.5	mm. 56.0	mm. 12.5	mm. 48.5	mm. 43.8
U.S.N.M., 74147 ¹	do. ³ ..	Mar. —, 1878	169.0	59.0	60.0	12.0	51.0	46.0
E. A. and O. Bangs, 12896 ¹ ..	do. ⁴ ..	Nov. 30, 1903	170.0	66.0	12.0	63.0	50.0	44.0
E. A. and O. Bangs, 12897 ¹ ..	[Male] ⁴ ..	Dec. 2, 1902	169.5	60.0	60.5	12.5	51.5	45.0
U.S.N.M., 74034 ¹	Female ⁵ .	Jan. 26, 1878	159.0	58.5	58.5	11.5	49.0	40.0

¹ Used in measurement averages on p. 569.

² Collected by A. H. Clark, at St. George, Grenada Island.

³ Type, collected by F. A. Ober, on Grenada Island.

⁴ Collected by A. H. Clark, at Spring Estate, Bequia Island.

⁵ Collected by F. A. Ober, at Rutland Vale, St. Vincent Island.

BUTORIDES VIRESCENS TOBAGENSIS, new subspecies.

Chars. subsp..—Resembling *Butorides virescens grenadensis*, but wing and tail slightly longer; bill more slender; neck, and sides of head, particularly cheeks and jugulum, lighter, more fulvescent, the hind neck somewhat duller.

Description..—Type, adult [probably male], No. 18033, Museum of Comparative Zoology; Tobago Island; R. W. Rawson. Pileum, occipital crest, postocular region, and a short subauricular streak, deep, glossy bottle green; malar stripe buffy white; submalar stripe tawny chestnut mixed with blackish; cheeks, auriculars, sides and back of neck, tawny chestnut, somewhat purplish and duller posteriorly; upper surface of body deep, more or less glossy, bottle green, the long, pointed, plume-like feathers of back and scapulars somewhat glaucous and inclining to bluish; wings fuscous, the primaries and outer secondaries dull, dark, greenish-blue slate color, the innermost primaries and outermost secondaries narrowly tipped with white; tertials, outer webs of inner secondaries, with all the superior wing-coverts, dark, glossy bottle green; outer scapulars on exterior webs and the first rows of lesser wing-coverts margined all around rather narrowly with tawny ochraceous, the other rows and the median coverts with buff, the greater coverts and outer webs of tertials and innermost secondaries with white; tail dark, glossy bottle green; chin and middle of upper throat creamy white, the latter streaked medially with clove brown; jugulum rather purplish tawny chestnut, much streaked medially with white, slightly with pale clove brown; breast, abdomen, sides, crissum, and axillars slate gray with a slight brownish tinge, the longest feathers of lower tail-coverts with slate-colored terminal portions; thighs dull tawny mixed with grayish brown; lining of wing slate gray, the feathers margined with buff or ochraceous, the edge of wing broadly buffy white.

Measurements..—Male:¹ Wing, 167.5–178 (average, 172.5) mm.; tail, 63–66.8 (64.7); exposed culmen, 55–63 (58.3); height of bill at base, 11–12 (11.4); tarsus, 46.5–51 (48.4); middle toe, 43.5–45 (44.4).

Type-locality..—Tobago Island, West Indies.

Geographical distribution..—Tobago Island, West Indies.

This new subspecies is much like *Butorides virescens maculatus*, but is smaller, except the length of the bill; and the neck and sides of head, particularly the cheeks and jugulum, are more fulvescent. From *Butorides virescens lucianus* it differs in having the neck and sides of the head duller, darker, less glaucous purplish, and, especially on cheeks and jugulum, more fulvescent. It is distinguishable from *Butorides virescens hypernotius* by its lighter, duller, more rufes-

¹ Four specimens, from the island of Tobago, West Indies.

cent (less purplish) neck and sides of head; much lighter, more fulvescent jugulum, conspicuously contrasted with the surrounding parts; and usually somewhat lighter posterior lower surface. Compared with *Butorides virescens dominicanus* it has the neck and sides of head darker, duller, and more rufescent; the jugulum much more fulvescent and conspicuously contrasted with surrounding parts; also the lower posterior parts darker. It may be separated from *Butorides virescens cubanus* by its longer wing and tail; lighter, duller, more rufescent (less purplish) neck and sides of head; conspicuously lighter, more fulvescent, and more contrasted jugulum. It is very easily distinguished from *Butorides virescens christophorensis*, by reason of its darker, duller, much less fulvescent (more purplish) neck and sides of head; much more contrasted jugulum; and much darker posterior lower parts. It is much unlike *Butorides virescens barbadensis* inasmuch as it is larger, though with a relatively more slender bill; and has the neck and sides of head duller, less fulvescent and somewhat more purplish, particularly posteriorly; the jugulum much more fulvescent and thus strongly contrasted with the surrounding parts; and the posterior under parts darker. It is even more different from *Butorides virescens bahamensis* in its much greater size throughout, darker, duller, less fulvescent (more purplish) neck and sides of head, and darker posterior lower surface.

A single bird in juvenal plumage does not differ from the same stage of *Butorides virescens cubanus*.

This island race is rather peculiar in its combination of color characters; for the fulvescent cheeks and jugulum are in more decided contrast to the adjacent parts than is the case in most of the other forms of the species; and the hind neck is unusually dull colored. The jugulum is still more fulvescent in two Field Museum specimens (Nos. 33659 and 33662) than in the type.

So far as known it is peculiar to the island of Tobago and permanently resident there.

Five specimens have been examined, all from the island of Tobago.

Measurements of specimens of Butorides virescens tobagensis.

Museum and number.	Sex.	Date.	Wing.	Tail.	Ex-posed cul-men.	Height of bill at base.	Tarsus.	Middle toe.
			<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
Field Mus. N. H., 33659 ¹	Male ² ...	Apr. 20, 1892	174.0	64.0	63.0	12.0	51.0	45.0
Field Mus. N. H., 33642 ¹	do. ²	do.....	170.5	65.0	58.8	11.0	47.0	45.0
Field Mus. N. H., 23662 ¹	do. ²	Apr. 15, 1892	167.5	63.0	55.0	11.7	46.5	44.0
M.C.Z., 18033 ¹	[Male] ³	.....	178.0	66.8	56.5	11.0	49.0	43.5

¹ Used in measurement averages on p. 571.

² Collected by W. W. Brown, on Tobago Island.

³ Type, collected by R. W. Rawson, on Tobago Island.

BUTORIDES VIRESCENS CURACENSIS, new subspecies.

Chars. subsp.—Similar to *Butorides virescens tobagensis*, but decidedly smaller (except bill and tarsus); neck and sides of head darker, less rufescent (more purplish) and not quite so dull; jugulum much darker, less fulvescent (more purplish), and not different in color from the adjoining portion of neck; glaucous, long, pointed, plumaceous feathers of upper surface with numerous very evident, though obsolescent, narrow, darker bars; breast and upper abdomen narrowly and somewhat obscurely, though evidently, barred with darker brownish gray.

Description.—Type, adult male, No. 37409, Carnegie Museum; St. Patrick, Curaçao Island, West Indies, May 2, 1911; M. A. Carriker, jr. Pileum, occipital crest, and postocular region, deep, glossy bottle green; a short subauricular streak black; malar stripe buff; submalar stripe somewhat purplish chestnut mixed with blackish; cheeks, auriculars, sides and back of neck, purplish chestnut, decidedly more fulvescent anteriorly, slightly glaucous posteriorly; upper surface of body deep bottle green, somewhat glossy, the long, pointed, plume-like feathers of back and scapulars in part rather oily or bronzy green, in part glaucous and somewhat bluish, and with very narrow, darker, somewhat obscure though very evident, cross-bars, these giving to all these feathers a peculiar "watered" appearance; wings fuscous, the primaries and outer secondaries dull, dark, greenish-blue slate color, most of the primaries and the outermost secondaries tipped with white; tertials, median and lesser wing-coverts, dark, glossy bottle green; outer scapulars margined on outer webs with dark, dull chestnut; most of the lesser wing-coverts margined all around with tawny, some of them with spots of buffy or whitish; median coverts broadly margined with tawny ochraceous; greater coverts narrowly edged with whitish or buffy, some of them having also small terminal whitish shaft spots; primary coverts with large sub-triangular terminal shaft spots of white or cream buff; tail dull, brownish bottle green, with a few obsolescent, narrow, grayish bars, and a narrow light brownish tip; chin and middle of upper throat buffy white, streaked medially with dark blackish brown, sparingly on the former, more heavily on the latter; jugulum purplish chestnut, streaked medially with white and a little with dark brown; breast, abdomen, sides, crissum, and axillars, slate gray with a brownish tinge, the middle of abdomen rather paler, the longest lower tail-coverts with whitish centers, the breast and upper abdomen with numerous narrow, obsolescent, darker bars; thighs rufescent; lining of wing rather light gray, mixed with cream white, cream buff, and a little ochraceous, the edge of wing broadly cream white.

Measurements.—Male:¹ Wing, 157.5 mm.; tail, 56.5; exposed culmen, 60.5; height of bill at base, 11; tarsus, 47; middle toe, 41.

Type-locality.—St. Patrick, Curaçao Island, West Indies.

Geographical distribution.—Island of Curaçao; possibly also the neighboring islands of Aruba and Bonaire.

Although the type is the only available specimen, it appears to represent an easily distinguishable subspecies. It differs from all of the other subspecies in the narrow barring of the breast, a character not present, even slightly, in any specimen of any form of *Butorides virescens* examined; and also in the distinctly barred effect of the long, pointed, glaucous, plume-like feathers of the back and scapulars. The latter character is discernible on close examination in some specimens of all the other races, but is in them scarcely obvious enough to be worth mentioning in either diagnoses or descriptions, and in no specimen of any of these other forms is it nearly so conspicuous as in the type of *Butorides virescens curacensis*. In addition to the two characters just mentioned, the present new race differs from *Butorides virescens cubanus*, with which in general appearance it bears closest resemblance, in smaller size (except bill), and also duller, less purplish (more fulvescent) neck and sides of head. From *Butorides virescens grenadensis* it may be distinguished in the same way, and in size still more decidedly. Additional characters separating it from *Butorides virescens maculatus* are much smaller size (except length of culmen), and darker, duller, more fulvescent (less purplish) neck and sides of head; from *Butorides virescens lucianus*, smaller size (except length of culmen), and darker, less purplish neck; from *Butorides virescens dominicanus*, smaller general size, longer bill, darker, duller neck and jugulum, and more deeply colored posterior lower parts; and from *Butorides virescens hypernotius*, of the mainland of South America and Costa Rica, much smaller size (except bill), and lighter, duller, less purplish (more fulvescent), neck and sides of head.

The type of *Butorides virescens curacensis* bears still some slight indications of immature plumage in the whitish and buffy spots on the lesser, greater, and primary coverts, broad edgings of median coverts, and in the dull fuscous greater coverts and a few of the inner secondaries; but in other respects it seems to be fully adult.

This may well be the form of *Butorides virescens* occurring on the near-by islands of Aruba and Bonaire,² but we have seen no specimens from those localities.

KEY TO THE SUBSPECIES OF BUTORIDES VIRESCENS.

- a. Colors deeper; posterior lower parts slate color or darker.
 b. Size smaller (wing averaging less than 170 mm.); white on median portion of foreneck usually much reduced..... *Butorides virescens margaritophilus*.
 b¹. Size larger (wing averaging more than 170 mm.); white on median portion of foreneck much more extensive.

¹ One specimen, the type, from Curaçao Island.

² Hartert, *Ibis*, 1893, p. 307.

- c. Neck and sides of head lighter, more rufescent (less purplish).
Butorides virescens saturatus.
- e¹. Neck and sides of head darker, less rufescent (more purplish).
Butorides virescens frazari.
- a¹. Colors lighter; posterior lower parts slate gray or paler.
- b. Posterior lower parts light gray.
- c. Larger (wing averaging more than 178 mm.).
- d. Neck darker; size smaller (wing averaging less than 185 mm.).
Butorides virescens crcomonomus.
- d¹. Neck lighter; size larger (wing averaging more than 189 mm.).
Butorides virescens anthonyi.
- c¹. Smaller (wing averaging less than 175 mm.).
- d. Neck and sides of head less fulvescent (more purplish) chestnut.
- c. Smaller (wing of male averaging less than 168 mm.); neck and sides of head more fulvescent (less purplish). . . . *Butorides virescens barbadensis.*
- e¹. Larger (wing of male averaging more than 168 mm.); neck and sides of head less fulvescent (more purplish).
- f. Posterior lower parts usually paler, more whitish; neck and sides of head averaging lighter, less purplish, chestnut; wing and tail somewhat shorter; bill more slender. *Butorides virescens mesatus.*
- f¹. Posterior lower parts usually darker, less whitish; neck and sides of head darker, more purplish, chestnut; wing and tail somewhat longer; bill stouter. *Butorides virescens dominicanus.*
- d¹. Neck and sides of head more fulvescent (less purplish) chestnut.
- e. Smaller (wing less than 166 mm.); neck and sides of head less brightly fulvescent. *Butorides virescens bahamensis.*
- e¹. Larger (wing usually more than 166 mm.); neck and sides of head more brightly fulvescent. *Butorides virescens christophorensis.*
- b¹. Posterior lower parts slate gray.
- c. Larger (wing averaging more than 175 mm.).
- d. Neck and sides of head paler; posterior lower parts averaging somewhat lighter. *Butorides virescens maculatus.*
- d¹. Neck and sides of head darker; posterior lower parts averaging somewhat darker. *Butorides virescens virescens.*
- c¹. Smaller (wing averaging less than 175 mm.).
- d. Neck and sides of head darker.
- e. Breast obscurely barred; long, pointed, plume-like feathers of back and scapulars distinctly barred; wing of male averaging less than 162 mm.
Butorides virescens curacensis.
- e¹. Breast not barred; long, pointed, plume-like feathers of back and scapulars not distinctly barred; wing of male averaging more than 162 mm.
- f. Neck and sides of head averaging darker, more purplish (less rufescent); size larger (wing averaging over 171 mm.).
Butorides virescens hypernotius.
- f¹. Neck and sides of head averaging lighter, less purplish (more rufescent); size smaller (wing averaging under 171 mm.).
- g. Smaller (wing of male averaging about 165 mm.); posterior lower parts averaging slightly lighter. *Butorides virescens cubanus.*
- g¹. Larger (wing of male averaging about 170 mm.); posterior lower parts averaging slightly darker. *Butorides virescens grenadensis.*
- d¹. Neck and sides of head lighter.
- e. Neck and sides of head brighter, paler, and more purplish, and particularly on jugulum and cheeks, less fulvescent.
Butorides virescens lucianus.
- e¹. Neck and sides of head duller, darker, and less purplish, and particularly on jugulum and cheeks, more fulvescent.
Butorides virescens tobagensis.

Table of comparative measurements of the subspecies of *Butorides virescens*.

MALES.

No. of specimens.	Name of subspecies.	Wing.			Tail.			Exposed culmen.			Height of bill at base.			Tarsus.			Middle toe.		
		Minimum.	Maximum.	Average.	Minimum.	Maximum.	Average.	Minimum.	Maximum.	Average.	Minimum.	Maximum.	Average.	Minimum.	Maximum.	Average.	Minimum.	Maximum.	Average.
14	<i>Butorides virescens virescens</i>	176.0	188.0	181.1	61.5	71.0	66.5	58.0	69.0	60.9	11.0	13.0	12.1	51.0	57.0	53.0	44.3	48.5	45.0
10	<i>Butorides virescens frazari</i>	176.0	189.0	183.2	63.0	72.5	69.2	60.5	66.5	63.7	11.0	13.5	12.3	51.0	58.0	53.8	44.0	48.5	47.3
15	<i>Butorides virescens anthonyi</i>	186.0	202.0	196.0	67.0	73.0	72.8	57.8	64.0	61.0	11.9	13.5	12.3	51.0	56.5	53.9	43.5	49.0	47.7
2	<i>Butorides virescens eremonimus</i>	181.0	183.0	182.0	65.0	67.5	66.3	57.5	63.0	60.3	11.0	12.5	11.8	51.5	52.5	52.0	46.5	48.0	47.3
1	<i>Butorides virescens mesatus</i> .....	.....	.....	169.0	.....	.....	63.0	.....	.....	61.5	.....	.....	12.5	.....	.....	49.0	.....	.....	44.0
14	<i>Butorides virescens hypernotius</i>	168.0	177.0	173.1	58.5	69.5	63.4	56.0	64.0	60.7	11.0	13.0	11.9	46.5	53.0	50.4	43.0	48.0	45.1
1	<i>Butorides virescens saturatus</i> .....	.....	.....	179.0	.....	.....	67.0	.....	.....	60.5	.....	.....	11.2	.....	.....	48.5	.....	.....	44.5
12	<i>Butorides virescens margaritophilus</i>	160.0	174.5	166.0	56.0	66.0	60.7	54.0	60.0	57.0	10.5	12.0	11.0	44.0	49.0	47.3	40.0	45.0	42.8
10	<i>Butorides virescens bahamensis</i>	156.0	165.0	161.7	58.0	62.5	60.3	51.0	64.0	57.2	10.2	12.8	11.3	42.5	51.0	45.3	38.0	41.0	39.5
8	<i>Butorides virescens cubanus</i>	160.0	171.5	164.9	58.5	64.5	61.2	55.0	62.0	58.9	10.5	12.5	11.5	44.0	51.0	48.2	39.0	45.5	43.3
2	<i>Butorides virescens christophorcnsis</i>	171.0	175.0	173.0	60.0	66.5	63.3	62.5	63.0	62.8	11.5	12.0	11.8	51.0	54.0	52.5	42.5	47.0	44.8
3	<i>Butorides virescens dominicanus</i>	168.5	175.5	171.3	62.0	69.0	65.7	57.0	58.5	57.8	11.0	12.5	11.6	47.5	52.0	49.5	42.5	46.0	43.8
2	<i>Butorides virescens maculatus</i>	179.0	181.0	180.0	64.2	70.0	67.1	56.5	61.0	58.8	12.5	13.0	12.8	49.2	52.8	51.0	43.5	46.8	45.2
8	<i>Butorides virescens lucianus</i>	165.0	176.0	171.2	63.0	66.0	64.6	54.5	60.0	57.1	11.8	12.8	12.1	47.0	51.0	48.4	39.0	44.0	41.8
4	<i>Butorides virescens barbadensis</i>	163.0	166.0	164.9	58.0	63.5	59.8	55.0	59.5	57.1	11.0	12.8	11.7	46.0	48.5	47.1	40.5	42.5	41.6
4	<i>Butorides virescens grenadensis</i>	169.0	170.5	169.8	59.0	66.0	61.0	56.0	63.0	59.9	12.0	12.5	12.3	48.5	51.5	50.3	43.8	46.0	44.7
4	<i>Butorides virescens tobagenis</i>	167.5	178.0	172.5	63.0	66.8	64.7	55.0	63.0	58.3	11.0	12.0	11.4	46.5	51.0	48.4	43.5	45.0	44.4
1	<i>Butorides virescens curacensis</i> .....	.....	.....	157.5	.....	.....	56.5	.....	.....	60.5	.....	.....	11.0	.....	.....	47.0	.....	.....	41.0

Table of comparative measurements of the subspecies of *Butorides virescens*—Continued.
FEMALES.

No. of specimens.	Name of subjects.			Wing.			Tail.			Exposed culmen.			Height of bill at base.			Tarsus.			Middle toe.				
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	
13	170.0	183.5	175.1	58.5	74.5	65.5	56.0	62.5	59.8	9.0	12.8	11.7	48.0	55.0	51.2	44.0	49.0	45.7	45.7	45.7	45.7	45.7	45.7
4	176.5	182.5	180.0	66.5	73.5	70.0	62.5	66.5	64.9	12.0	13.0	12.5	51.0	56.0	52.9	46.0	47.5	46.8	46.8	46.8	46.8	46.8	46.8
11	180.0	196.0	189.7	63.0	74.5	69.6	57.0	62.0	60.2	10.5	13.0	11.8	48.0	54.5	52.5	43.0	48.0	45.5	45.5	45.5	45.5	45.5	45.5
1	.....	.....	182.0	.....	.....	65.0	.....	.....	54.0	.....	.....	12.0	.....	.....	50.0	.....	.....	46.0	46.0	46.0	46.0	46.0	46.0
1	.....	.....	164.0	.....	.....	61.0	.....	.....	62.0	.....	.....	12.5	.....	.....	50.5	.....	.....	44.5	44.5	44.5	44.5	44.5	44.5
6	158.0	180.5	172.2	60.0	71.5	66.2	55.0	63.5	59.1	11.0	12.0	11.7	46.0	52.0	49.9	40.0	46.3	43.7	43.7	43.7	43.7	43.7	43.7
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9	157.0	169.0	161.9	53.0	64.0	59.3	54.0	59.0	56.2	10.7	12.0	11.1	42.5	47.0	45.3	40.0	43.0	41.2	41.2	41.2	41.2	41.2	41.2
4	156.0	164.0	160.1	58.0	63.0	59.9	53.5	61.0	56.7	11.0	12.2	11.6	46.0	48.0	47.1	39.0	41.0	40.0	40.0	40.0	40.0	40.0	40.0
10	157.0	174.0	167.8	55.5	67.0	62.2	52.8	62.0	58.8	10.8	12.5	11.3	44.0	52.0	47.3	38.0	44.5	42.2	42.2	42.2	42.2	42.2	42.2
2	164.0	167.0	165.5	58.5	60.0	59.3	57.0	61.0	59.0	11.0	11.5	11.3	46.0	52.0	49.0	39.5	40.5	40.0	40.0	40.0	40.0	40.0	40.0
1	169.0	65.0	56.5	12.5	48.5	43.0	43.0	43.0	43.0	43.0	43.0
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8	162.0	172.0	166.7	60.0	61.5	60.8	55.5	57.0	56.3	12.0	13.0	12.5	46.5	50.5	48.3	41.0	45.0	42.7	42.7	42.7	42.7	42.7	42.7
1	159.0	58.5	58.5	11.5	49.0	40.0	40.0	40.0	40.0	40.0	40.0
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